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ELIMINATING THE GENERAL CONTRACTOR.

THAT the general contractor has for years been a thorn in the side of the legitimate plumber and fitter is a well recognized fact, and efforts to put him out of the running have been made from time to time in many communities.

In some instances these efforts have been more or less successful, but on the whole the evil has cropped up again, much to the annoyance of those in the trade who anticipated straight man-to-man dealings with architects or owners in figuring plumbing and heating work.

The general contractor has been referred to as a kind of "broker," a man who sub-lets the various contracts concerned in the erection of a building. It is calculated that he must make a margin of profit, as must also the sub-contractor. Hence two parties are interested in the profit on labor and material, when it would seem that but one party—the one who installs the work, should be entitled to that profit.

At the recent meeting of the Missouri Master Plumbers' Association resolutions were adopted condemning sub-contracting, and it was recommended that, wherever it was possible, the master plumber and fitter should avoid the general contractor and figure directly with the house-owner or architect.

It was pointed out that the general contractor was a good deal of a menace to the profitable and legitimate conduct of the plumbing and heating business, and, in many instances, the curb-stone or barn-yard craftsman was able to compete successfully against the competent trade in sub-contract work, and that owing to the low figures of the curb-stone man, the contract usually went to him. It was further argued that house-owners and architects should be fully apprised of the fact that the elimination of the general contractor would mean better work and even more conservative prices.

The general contractor is not as a rule, an authority on sanitary plumbing systems, nor is he in a position to talk intimately or intelligently upon the subject. It is rare indeed that you find a general contractor who knows all the intricacies that enter into a first class installation of plumbing or heating work, and on many jobs, where he is the dominant factor, inferior material and shoddy labor are frequently the unfortunate results.

Since the master plumber or fitter is a specialist, he should sell his service as such, not indirectly, but directly. His service represents knowledge and experience. Hence it would naturally seem that he should refuse to enter into business relations with any second party, and should deal direct with the principals—the owner or architect.

Representative men in the trade have made earnest efforts to abolish the practice of sub-contracting, because it is held to be unprofessional, ruinous and unprofitable.

It is a condition which cannot be legislated against, except in contract work for the state and federal government. Resolutions may be passed condemning the practice, but after all, it would seem that it is a question for the individual craftsman. If he is loyal to himself and his fellow craftsmen, and really wants to sell service as a specialist, he will avoid flirting with the general contractor.

The trade has various complex problems to solve, and the evil of sub-contracting is one of them. Sooner or later the representative men of the plumbing and heating crafts must take a united stand and agree to part company with the general contractor.

Water Supply and Sewage Disposal Systems for Suburban and Farm Premises

By P. H. BRYCE, M. A., Ottawa, Ontario

EVERY city landlord knows that it pays him to install city water and plumbing in his houses since they rent better, and today every farmer who is progressive wants similar conveniences. The writer, who has for many years supervised Public Health Work in Canada, has found it possible to install the following simple water works and sewage disposal plant in summer resorts, colleges, all year round houses in suburban districts, cheese factories and abattoirs at a very moderate cost with the complete absence of nuisance.

The Water Supply.

In most cases well water will be the natural supply, pumped by wind mill; but whether it be a spring higher on the hillside piped in by gravity, or a pure lake water pumped by gasoline engine or electric pump the problen is equally simple. The immediate needs of farm houses, cattle barns, and stables can be met usually by a thousand-gallon tank; but double or treble this amount is desirable to provide storage against days without wind or when the engine is out of repair. The location of the water tank will be that most convenient to the buildings to be supplied. Sometimes placing it over the kitchen or in the barn may prove most convenient, but usually the main tank can be placed in the angle iron frame work of the wind mill, when this is the motive power.

In a plant in use for years the wind mill, fifty feet high, is placed over the well which is seventy feet from the house and has a large 1,000-gallon tank in the wind mill at such elevation as will supply a similar tank over the kitchen in the house and a tank over the cattle stable. The piping is of 1½-inch galvanized iron from the main tank to each house tank, while the stable tank with a 1-inch pipe supplies the drinking basins in front of the animals. In northern climates all exposed pipes are protected in boxes, 1 foot square, made of tongue-and-grooved sheeting with space filled with dry sawdust, while pipes laid in the ground are laid beneath the frost line. Inasmuch as the tank in the wind mill is receiving constantly the underground water from the pumps at a temperature of 50 degrees Fahr., it is in practice at times found unnecessary to make such air space around it; but if thought preferable this is readily accomplished. Overflow pipes from the house and stable tanks should be provided. The

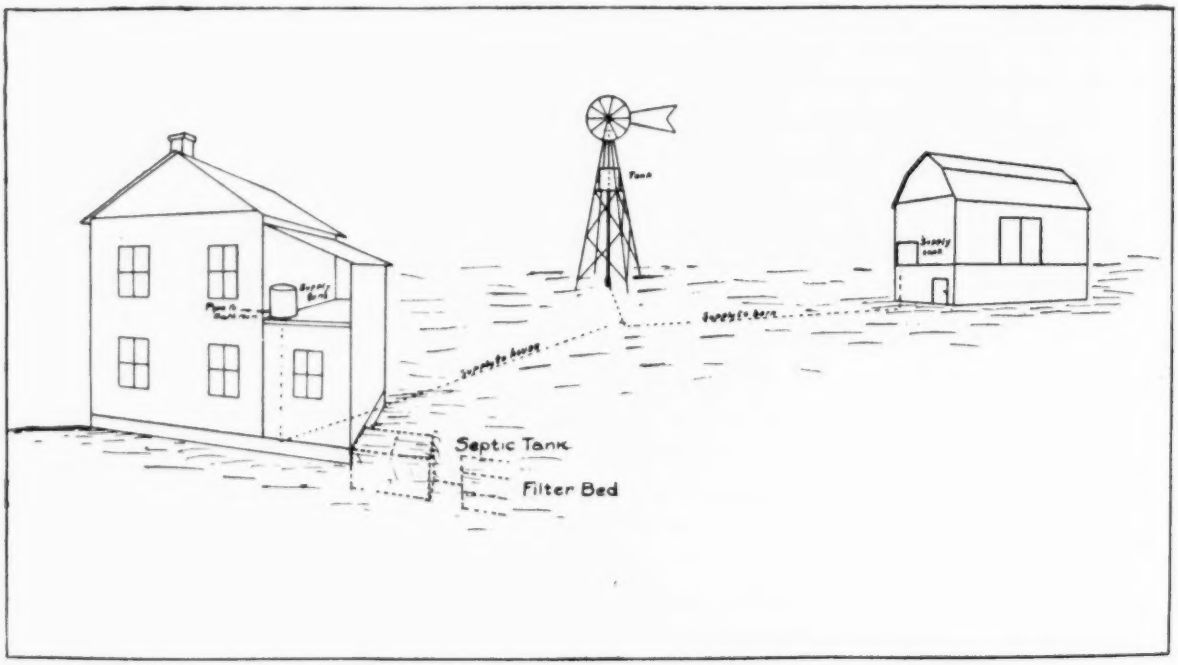


Fig. 1. Sketch of Water Supply and Sewage Disposal Systems for a Farm Home.

house tank supplies water to the bath, closets and kitchen sink through a ¾-inch pipe. As a men's large washroom at the house is always necessary, earthenware basins with a common discharge pipe as well as a water closet can readily be supplied from the common tank over the kitchen and the waste water be carried to the soil pipe and septic tank.

The Septic Sewage Disposal System.

The septic tank, as shown in the diagram, serves for any ordinary installation and is built conveniently for a private house 6 feet long by 3 feet wide and 3 feet, 6 inches deep, inside measurement. The walls and floor are made of concrete 8 inches thick and finished inside with a mortar of 1 part of cement to 2 parts sand. The cover is best made double of 2-inch concrete in each, with an air space of 4 inches between to maintain the heat, with 16 inches square manholes, that of the discharge tank to

be placed over the siphon. The operation of the tank is simplicity itself. All sewage, bath water and kitchen wastes are collected and discharged into the septic tank, No. 1, in Fig. 2. When the septic tank has been inoculated with a shovelful of garden mold, it will be found after a few days to be fermenting and a black scum to form on the surface, this being held up by the gases of fermentation. Liquefaction is taking place in No. 1 tank to the point of liquefying 40 per cent of the sewage in 24 hours. As tank No. 2 fills a point is reached at which the siphon discharges at a definite height according to the diameter of the discharge pipe and depth of trap. In the illustration the discharge is a 3-inch heavy iron pipe and empties at 28 inches. Thus the requirements of any work may always be provided by building a large enough tank for intermittent discharge, varying to some degree in keeping with the nature of the soil. Thrice in 24 hours is allowable in sandy soil, but should the soil be clayey then it will be well to increase the size of the tank and the number of tiles and provide for but one discharge daily. It is evident that the capacity of the tiles must equal that of the contents of tank No. 2. When soils are close and impermeable it will be necessary to provide for the absorption of the sub-surface tile water by sub-soil drainage two feet below their level. For an ordinary house a trench 3 feet deep, with a tile laid at the bottom and covered with broken stone or gravel and fine gravel at the level at which the sub-surface tiles are laid, will be found sufficient. In the case of cheese factories, creameries and slaughter houses it is very essential that ample area both in the tank and discharge tiles be provided, since large amounts of cold water are often used and so lower the temperature of the septic tank. In cheese factories and creameries it is further worth while to have the waste water flow through a coarse canvas frame, serving the double purpose of saving fats which would lessen the septic action, which readily breaks up protein matter, starches and sugars, but acts very slowly on fats.

The operation of the system is simple and automatic. As the sewage passes into tank No. 1, which is tightly covered, it displaces from above the sewage an amount of air equal to the cubic area of the entering sewage. Hence it is necessary to leave an outlet for this air, which is most easily supplied through the drain and soil pipe, opening above the roof of the house, and which must have no trap on it, all fixtures, as baths, sinks, lavatories, etc., being each trapped separately. It is in practice found that the amount of air dissolved in the large amount of water used supplies ample oxygen for the growth of *aerobes* or air germs on the surface of the sewage, while

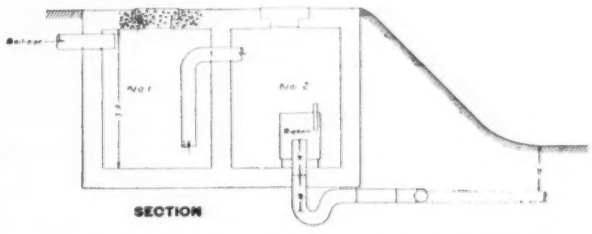


Fig. 2. Sectional View of Septic Tank for Sewage Disposal.

the *anaerobes* or those which liquefy the material beneath the surface utilize the oxygen of the protein substance for their growth. As soon as No. 1 tank is filled, the liquid rising in the overflow pipe discharges into No. 2 tank. Thereafter the increase of sewage in this tank equals the amount of liquid sewage entering No. 1. At each discharge into No. 2 the air over it is displaced and should communicate with that in No. 1 above the partition wall whose air passes by the soil pipe to outer air above the house. No local ventilation to the tank is thus required, and no escape of gases near the ground need take place. It is obvious that the decomposition, which goes on in the tank, depends upon the growth of microbes, especially of the nitrifying germs, which live normally in the soil; hence a temperature must be maintained above 50 degrees Fahr. This is done by banking a terrace of earth around the tank, where the slope of the ground does not allow its being set in the ground, while in winter a foot or two of straw helps to maintain its heat.

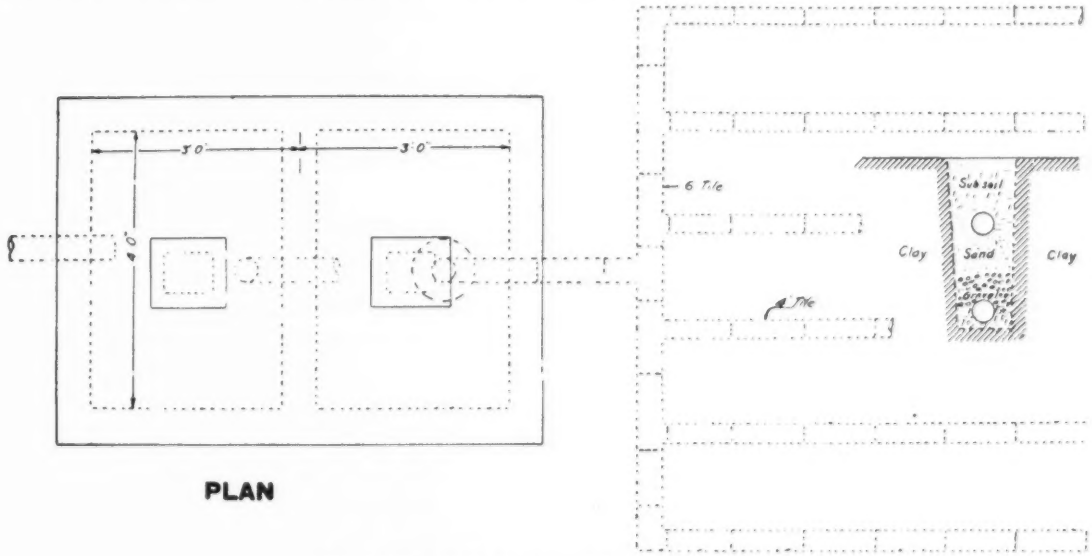


Fig. 3. Plan of Septic Sewage Disposal System.

No. 2 tank must be emptied intermittently and this is most conveniently done by a proper siphon. This is a simple, yet most delicate apparatus, and depends for its

perfect operation upon a perfect balance between inside and outside air pressure. A 3-inch siphon is ample for any ordinary house tank and is not so very expensive. It is essential to know that the success of the whole system depends upon the regular automatic discharge from this tank, holding, we may suppose, 200 gallons which require 400 4-inch field tiles to receive this amount.

The tiles must be laid one foot beneath the surface of the ground previously graded and leveled and are best placed on 4-inch strips of board so that a true grade is insured which should not be more than 1 inch in every 50 feet. In this way each tile is filled equally and the liquids escape through the joints leaving any sediment to settle in the tiles. Through the soil or from a tile leading to the surface at the end of a row air enters and so nitrification of any organic deposits can go on. This is so complete that in a well-acting system nothing but a stain of dark carbon will be found in these tiles even after years. The water flowing from the deeper sub-soil tiles is clear and wholly free from odor in any system not overtasked. The danger from winter freezing does not exist in any good porous soil. The sewage leaves the tank above 50 degrees Fahr., and after it discharges will have soaked into the earth below the frost line before it has time to freeze, but tiles in exposed places may very well be protected by a layer of straw, thrown over them. Where the soil area is limited and a special filter bed has to be made, it is possible to do intensive work by increasing the deep sub-soil tiles. In a suburban college building plant constructed under the direction of the writer by laying rows of tiles at two feet intervals in upper and lower tile beds, the total sewage from closets, kitchens, baths and sprays for 200 inmates has been perfectly disposed of during four Ottawa winters in an area less than half an acre or at the rate of about 20,000 gallons per acre per diem. Hence it is apparent that the waste from the floor of slaughter houses, creameries and cheese factories can be satisfactorily dealt with by the installation of such a scientific method of promoting the rapid breaking up of organic materials by imitating the process, which breaks up manure in well-cultivated soils.

INDIANA NEWSPAPER PRINTS "GLAD HAND" EDITORIAL IN HONOR OF THE PLUMBER.

That newspapers throughout the country are slowly, but surely, awakening to a truer estimate of the master plumber is noticeable from time to time. No doubt this changed attitude of some newspapers can be traced to the ceaseless educational campaign of the trade press in behalf of the craft.

During the annual convention of the "Indiana State Association of Master Plumbers," now known as the "Indiana Society of Sanitary Engineers," the Fort Wayne Sentinel, of Fort Wayne, Ind., in which city the convention was held, published the following editorial:

The Glad Hand to the Plumber.

The Indiana Association of Master Plumbers is now in Fort Wayne holding its annual convention. Not only are they a lot of mighty fine-looking fellows, but when one comes to know 'em better he is both amazed and embarrassed over the fact that he has at times been rather suspicious of the craft and has perhaps indulged in some caustic comment as he scanned their bills for divers and sundry services rendered. Can it be possible that the general public has misunderstood and harshly misjudged the plaintive plumber all these years during which he has been the meek and uncomplaining target of the cruel jokesmith?

Yet that has been the fate of the plumber man. He has been pictured as a bandit and a highwayman, without scruple and without conscience, and the cheap wits of all ages have regarded him as their legitimate prey. He has been assailed from every quarter, and the plumber joke has run a very close second to that other well-known atrocity, the mother-in-law joke. Through it all, however, the plumber has managed to keep reasonably sweet and smiling. He has suffered as the butt of the joke uncomplainingly. He has possessed himself in patience, aware of the ultimate vindication that must come when the public comes to know him better and to understand that instead of being a highwayman he is in fact a serious business man and as a rule a mighty good sort of citizen.

Such gatherings as that now in progress in Fort Wayne will contribute largely to this end. This city is proud to have as its guests the members of the Indiana Association of Master Plumbers, and to have been chosen as the city in which they not only discuss the problems of their craft, but, in company with their wives, their daughters and their sweethearts, foregather in a bit of relaxation and good fellowship. This city is glad to know the master plumbers better. It has given them its most cordial welcome, and it trusts their stay in Fort Wayne may be altogether profitable and wholly pleasant.

A NEW ANTI-RUST RECIPE.

A method of protecting articles of steel from rust is described in the "American Machinist," as follows: Cheap varnish is diluted to two or three times its volume with methylated spirits. On account of evaporation the mixture is made up as required. The method of applying it is as follows: The apparatus consists of two oil drums, each minus one end. An ordinary five-gallon drum, which is 11 inches in diameter, has ½-inch holes punched in the bottom and sides. The other drum may be of 6¾ gallons capacity, or 12 inches in diameter, or a 10-gallon drum, which is larger still. The larger vessel is filled about one-quarter full, and the articles to be treated are put in the smaller vessel. The perforated drum is lowered into the liquid, immersing the articles to be coated. Withdrawing the smaller vessel immediately, the major portion of the fluid drains back again in a minute or so. To finish draining and to harden the coating the contents are then shot out on a wire draining surface and in fifteen minutes are ready to pack. The process is really a cheap and effective form of cold lacquering in bulk. It is stated that the articles remain bright for long periods of time, while the coating is not in the least obvious—in fact, it can hardly be detected—so that the appearance of the goods is not altered. Articles so treated will stand a long sea voyage, arriving at their destination in perfect condition, and will then keep free from rust for twelve months.

Shortsville, N. Y.—James Bassett has opened a plumbing establishment on Main Street in this town.

Newark, N. J.—The O'Rourke Heating & Ventilating Co. has been incorporated with a capital of $10,000. The incorporators are Christopher A. O'Rourke, John J. Berry and William P. Berry; all of this city.

Washington, Ia.—J. E. Ream and William T. Carson have formed a partnership under the name of Ream & Carson and have opened an up-to-date plumbing and heating establishment in the building adjoining the Colenso Hotel.

Computing Radiation for Steam and Hot Water Heating Systems

By CHARLES L. HUBBARD

IN computing the radiation for a building by the "heat unit" method the process is the same for both steam and hot water except for the "efficiency" constants which represent the heat transfer from the radiator to the surrounding air per square foot of surface per hour.

When based on the heat transfer per degree difference these constants become practically the same for steam and water for the same temperature differences.

The temperature difference is the governing factor, and not the medium which transmits the heat from the boiler to the air of the room.

The point which must be kept in mind, however, when assuming the temperature by steam and water radiators is the fact that the temperature of the radiator in the first case may be taken the same as that of the steam with which the radiator is filled, while in the second case the average temperature of the water passing through the radiator must be taken.

In estimating the average temperature, it is customary to take the arithmetical means of the inlet and outlet temperatures. For example, the working temperature of a radiator supplied with water at 180 degrees and discharging it at 160 degrees is 180 plus 160, divided by 2, that is 170 degrees.

Direct Radiation.

The first step in computing the radiating surface for a given building, whatever the type of radiation or medium of heat transfer, is to determine the total heat loss per hour for the coldest weather it is desired to provide for. This should include transmission through walls and windows, leakage, and the effect of exposure (points of compass) upon the different rooms, or upon the building as a whole, when the total radiation is under consideration for preliminary work.

Methods for computing the total heat loss have been considered in detail in the preceding article and may be used, as there described, for the first step in determining the radiating surface.

In the case of direct radiation, it is simply necessary to furnish sufficient radiator capacity to give off just enough heat to balance that lost by transmission and leakage, if we neglect the extra power required for warming up a cold building. Ordinarily, very little, if any allowance is made for this, because the coldest weather for which the radiators are proportioned usually occurs only two or three times a season, at the most, and at all other times there is surplus capacity for "warming up." Furthermore, when the room is below 70 degrees, the inside temperature for which the radiators are commonly designed, there is a greater difference in temperature between the heating surface and surrounding air which adds to its efficiency.

In many buildings, at the present time, heat is kept on continuously day and night in sufficient amount to prevent the temperature from falling very much below the normal, it being considered as economical to do this as to allow the building to cool down during the night and then be obliged to force the heating system for a considerable length of time in the morning. When this is done, provision for "warming up" a cold building is unnecessary. There are cases, however, where special provision must be made, and the "time element" will, therefore, be considered in some detail at a later point in the present article.

In computing the square feet of direct radiation for warming a given room, it is necessary to know the total heat loss per hour, and the heat given off per square foot of radiation per hour at the normal temperature of the room. When these quantities are equal, the temperature of the room will evidently remain constant.

Hence, $R = \frac{H}{E}$, in which—

R = square feet of radiation required,

H = total heat loss from the room, in B. t. u. per hour,

E = efficiency of the radiating surface = the B. t. u. given off per square foot of surface per hour under existing conditions,

The value of E has been determined by experiment, and there is a considerable amount of reliable data available along this line. Here as in the case of transmission through different kinds of building material, there is considerable variation in the results of different tests. This is probably due to slight differences in the actual operating conditions, although practically the same in all essential details. The heat given off by a radiator per square foot of surface, per hour, per degree difference between the heating medium and the surrounding air depends upon the character of the surface, the form and general proportions, freedom from air, the velocity of air movement over the outside, and the actual difference in temperature between the steam or water and the surrounding air.

For example, a rough unfinished surface, as it comes from the foundry, will give off more heat under the same conditions than one covered with glossy enamel.

The general form and make-up of a radiator affect the efficiency, principally by obstructing the air-flow over the radiating surfaces, a high, deep radiator with the sections close together is less efficient than a low, shallow one of open pattern, of such design that the air may pass over all parts freely. Surfaces so arranged that heat is radiated directly from one to another are evidently ineffective. Air in either steam or water radiators prevents the entire surface from working at its full efficiency and therefore reduces its power or capacity.

The rate of heat transmission from a radiator to the surrounding air is directly affected by the velocity of the currents passing over it. This, in turn is affected by the design of the radiator, as stated above, and also by its location with reference to windows, doors, etc., or other causes which may produce drafts of air over it.

Some of the co-efficients of heat transmission per square foot, per hour, per degree difference given by various authorities are as follows, and are of value for purposes of comparison and for making up averages for practical use.

Table I (J. H. Mills, 1888).

Type of Radiating Surface.	Coefficient of transmission per degree diff.
3-inch wrought iron pipe, single line	1.98 B.t.u.
1-inch wrought iron pipe, 4 lines	2.53 B.t.u.
Vertical wrought iron pipe radiator, 1 row	2.43 B.t.u.
Vertical wrought iron pipe radiator, 2 rows	2.04 B.t.u.
Vertical wrought iron pipe radiator, 3 rows	1.80 B.t.u.
Vertical Union cast iron radiator	2.02 B.t.u.
Vertical Excelsior cast iron radiator	1.70 B.t.u.
Vertical Detroit cast iron radiator	1.65 B.t.u.

This table is one of the earlier ones available, and is therefore somewhat incomplete as to details. The total difference in temperature between the heating medium and the surrounding air is not given, but may be assumed as about 150 to 160 degrees which corresponds to a room temperature of 70 degrees and steam at 2 to 5 pounds gauge pressure.

No data is given regarding the proportions of the cast-iron radiators, but it is fairly safe to assume them of the two or three column type, from 36 to 42 inches in height. It will be noted later that the co-efficients of transmismission correspond very well with average results obtained more recently for the conditions assumed above. The data relating to the wrought- iron pipe radiators is of especial interest in showing the effect of deepening the radiator. A radiator made up of a single row of vertical pipes has a co-efficient of 2.43 while one with three rows has a co-efficient of only 1.8.

Table II is made up from data presented before the American Society of Heating and Ventilating Engineers, in 1910, by J. A. Donnelly, and shows the effect upon the co-efficient of transmission *per degree difference* by varying the *total* difference between the heating medium in the radiator and the surrounding air.

This is of especial importance in computing radiation for steam and water heating, where the difference is from 140 to 150 degrees in low-pressure steam heating and 100 to 110 degrees in the case of gravity hot-water heating under average conditions. It also shows how the efficiency of radiating surface may be temporarily increased for heating up a building on a cold morning by increasing the steam pressure. This not only increases the total temperature difference between the steam and air, but also the rate of transmission per degree difference.

In raising the steam pressure above the normal, care must be taken to do it gradually, else there will be trouble from water-hammer due to an unbalanced pressure in the piping, and in some plants it will be found impossible to raise the pressure above 4 or 5 pounds owing to this trouble. In any case, the pressure on a low-pressure system should not be increased to more than about 20 pounds under ordinary conditions, owing to leaks around valve stems and joints, which are not noticeable at 1 or 2 pounds. Furthermore, there is danger of possible cracked sections in cast-iron radiation which may be ruptured at higher pressures.

Table II is arranged in the same general manner as Table I.

Table II. (J. A. Donnelly, 1910.)

Diff. in temp. between air and radiator	Coefficient of transmission per deg. diff.	Diff. in temp. between air and radiator	Coefficient of transmission per deg. diff.
60	1.75	140	2.11
70	1.80	150	2.15
80	1.85	160	2.19
90	1.90	170	2.23
100	1.94	180	2.26
110	1.99	190	2.29
120	2.03	200	2.32
130	2.07	.....	.....

In using this table for different forms of radiation the following ratios are given:

Circulation coils	1.00
C. I radiators, 2 col. low, and wall	0.96
C. I. radiators, 2 col. high, and 3 col. low	0.92
C. I. radiators, 3 col. high, and 4 col. low	0.88
C. I. radiators, 4 col. high	0.84
C. I. radiators, extended surface	0.80

Example:—The total heat loss from a room is 30,000 B.t.u. per hour in the coldest weather. It is desired to use high, 3-column cast-iron radiators with steam at atmospheric pressure. How many square feet of radiating surface will be required?

From a steam table we find the temperature of steam at atmospheric pressure to be 212 degrees; making the temperature difference between the radiator and surrounding air 212—70=142 degrees.

Table II gives the co-efficient of transmission for 140 degrees as 2.11.

The ratio for a high 3-column radiator is 0.88, hence the efficiency of the radiator under existing conditions will be $2.11 \times 0.88 \times 142 = 264$ B.t.u. per square foot of surface per hour, and the room will require $30{,}000 \div 264 = 114$ square feet to warm it in the coldest weather.

Example: The total heat loss from a room is 20,000 B.t.u. per hour in the coldest weather; it is desired to use low 3-column hot-water radiators, with an initial temperature of 180 degrees and a final temperature of 160 degrees. How many square feet of surface will be required? Average radiator temperature $= \frac{180+160}{2} = 170$ degrees, and difference between radiator and room=170—70=100 degrees. The co-efficient factor from Table II for 100 degrees difference is 1.94 and the ratio of a low 3-column radiator 0.92, making the efficiency $1.94 \times 0.92 \times 100 = 178$ B.t.u. per square foot per hour This calls for $20{,}000 \div 178 = 113$ square feet of surface to warm the room.

(To be continued.)

RETURNING THE WATER OF CONDENSATION.

By W. H. Wakeman.

IN a certain heating plant, located about three hundred feet from the boilers that supply the steam, water resulting from the condensation of this steam is sent back to the engine room, and pumped into the boilers again. Full boiler pressure is carried to the building, and it is then reduced for heating purposes. As the long return pipe cannot have a steep pitch, a return trap is used to force hot water through, and this was operated at full pressure, which did not prove satisfactory in practice. There were seventeen other traps discharging into the same return pipe, hence when this return trap emptied under high pressure, a rush of water resulted which proved too strong for the service required.

To demonstrate this, a coupling in this pipe was removed, and a reducing tee substituted. At this point the pipe was 2 inches in diameter, and the tee was 2 x 2 x 1-inch. A short nipple was screwed into the outlet, followed by a gate valve and a piece of pipe about 6 feet high. When the trap discharged with the valve open, water flowed out of this pipe like a fountain.

This idea of a "surge pipe" was enlarged and extended as shown in Fig. 1. The 6-foot pipe was removed and a short nipple substituted, followed by a 1 x 2-inch reducing coupling. A 2-inch pipe 10 feet high was connected into this coupling, and although the height was thus nearly doubled, and the capacity increased four fold, hot water would still flow out of this surge pipe, when the trap discharged.

Of course, the water left in the pipe would then find its lowest level in the horizontal return pipe, while the trap was filling again.

The surge pipe idea was further enlarged upon as illustrated in Fig. 2. The one-inch valve and nipple were retained, but a 1¼ x 1¼ x 1-inch reducing tee was used at 2, followed in each direction by a 1¼-inch nipple. On the end of each is a 1¼x1-inch ell, supporting a 2-inch pipe 10 feet high, thus giving double the capacity of Fig. 1. The larger fittings were used at 2, 3 and 4, to give

greater strength to withstand increased weight applied with more leverage, and the unavoidable vibration. In practice, water was thrown out of these surge pipes, although it came from one at a time, and there appeared to be no rule of action, as sometimes one delivered and again the other. Inasmuch as the natural course of this water was flowing through a nearly horizontal pipe, that was soon greatly increased in size, and to come out of the surge pipe it must turn at right angles and rise more than 10 feet, it showed that a considerable force was applied many times per day. This was objectionable to the engineer, but the details are not of special interest in this connection.

The supply pipe for this heating system is arranged as follows: From a 6-inch heating main in the engine room an outlet is provided through a 3-inch angle valve. A 3-inch pipe is continued for 7 feet, and is then enlarged to 4-inch by the use of a 3¼-inch ell. This drops vertically for 11 feet, after which it is carried nearly horizontally, but is pitched in the direction that steam travels for 144 feet. Here a tee is used to turn the pipe upward for 6 feet and to provide an outlet for water resulting from the condensation of steam. This is taken by a trap and sent to a receiver in the engine room. The 4-inch pipe is continued for 132 feet farther, still pitching in the same direction, until another riser is required, and at this point the drip pipe 2, in Fig. 3, is connected. To overcome the objection above referred to, and to insure an economical and adequate rate of delivery for the return trap, the apparatus here shown was installed and perfected. Previous to the installation of these improvements an experiment was tried by taking steam from another part of the heating system to operate the return trap, 11, but it would not cause the trap to discharge rapidly enough to take care of all the water that came to it in cold weather,

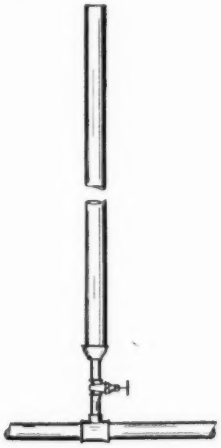


Fig. 1.

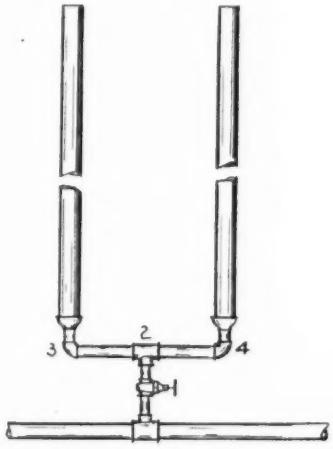


Fig. 2.

because the pressure was too light to force water out quickly. The rate at which a trap of any kind fills, denotes the amount of water coming from the system, but the rate of discharge is an entirely different consideration. Of course the latter controls the capacity, as it can only take water as fast as it is discharged. With any kind of a tilting trap it is easy to observe the two operations, and note the difference. It usually discharges in much less time than it fills, hence if the time of operations is reversed, something should be done to hasten the discharge. Due application of these principles will assist the steamfitter in solving many problems that arise in this connection, and may enable him to realize the difference between success and failure in making a plant do what it was designed to accomplish.

In Fig. 3 the drip is delivered through 2 to the trap, 3, which discharges it through 4 to the main return pipe. If this trap is out of order, it is shut off by closing the valves 5 and 6, and opening 7 about ⅛ of a revolution. Dry steam is delivered through 8 to a ½-inch reducing

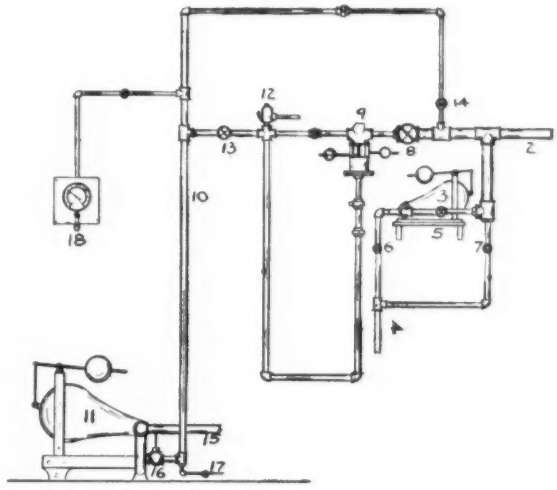


Fig. 3.

valve, 9. It leaves this at about 10 pounds and is discharged through 10 to operate the return trap, 11. If 11 remains idle long enough for a higher pressure to accumulate beyond 9, it is relieved by the ½-inch safety valve, 12, which discharges into the heating system so that no heat is lost. If 9 is out of order temporarily (which very seldom happens) it is shut off by closing 8 and 13 and partly opening 14, which is a ¾-inch globe valve. When 11 is full, it discharges through 15 to the main return pipe. It is controlled by 16, which is closed when 11 is filling, and open when it is discharging. Any vapor, that is left in 11, passes out through 17 to the main return pipe, thus saving all of the heat. The steam gauge 18 shows that the pressure varies, as 11 operates.

The main pipe 2 is 1½ inches, while 9 is only for a ½-inch pipe. This is a radical reduction in size, but gives good results, because it is large enough for the service required. In some cases a reducing valve larger than the pipe is used with a bushing at each end, but this is a mistake, for it should not be larger, even where much steam is used. If no other size is available, a bushing may be used on the inlet, but the outlet ought always to be full size. This allows the steam to expand rapidly, and assists in securing proper reduced pressure. Some reducing valves are designed to be so installed, and are flanged accordingly, while others are the same size at both ends. The latter give good results in some cases, but the former are suitable for every condition.

This plant was referred to in my letter on page 12 of the January 1st issue of "Domestic Engineering," and the apparatus taken together operates in a very satisfactory manner, because it is practically noiseless, and it accomplishes in a satisfactory manner the work for which it was designed. A careful study of these details will enable some of our steamfitters to adopt better methods, and result in more satisfactory service than can otherwise be secured, or at least than have been realized in some cases.

Sales Talks—"An Experiment"

By WILLIAM ROBERT MARSHALL

SOME six or seven months ago a plumber came into the office to see me about writing specifications for him, which he could use in conjunction with his bid for the plumbing work on a residence. I asked him what style of a residence, the estimated cost and with whom he was figuring.

"Oh, it's a contractor friend of mine, who draws his own plans, does his own building and sells the houses to whomsoever he can," he replied.

"Have you had many jobs from him?" I asked. "And what quality of plumbing fixtures has he been using?"

"Just regular, I do most of his work; he doesn't do very many of them and I generally get them."

"What's the idea of a specification on this one?" I quizzed, in an attempt to find out just what he was after.

"Well, I'll tell you," he replied, "it's just this way. Jackson, that's the contractor's name, has a plan for a dandy residence, and he has a prospect who has a vacant lot whom he thinks he can induce to build this residence if he can make the price right, and he has put it up to me to dope out a set of specifications and give him a figure, see?"

"Yes, I see; now you tell me about what you have in mind, and I'll see what I can do for you," I replied.

I had been watching this young man for some time, and had on several occasions given him a little talk along the suggestive line of trying to be more of a "Salesman Plumber" than a mere "Figuring Plumber," but hadn't up to that time made much headway with him. His argument against my policy had always been: "I can't do that in my neighborhood, because I have too strong competition to buck up against. Every time I try that quality scheme of yours, one of my hungry competitors comes along and shows the people how much money they could save by letting him do the job." So, when I left it to him to name the kind of fixtures he wanted written in his specification, he embarrassedly began:

"Oh, I don't want anything swell. Jackson said to keep the price down and he would have a better chance of putting the deal through. So just write: "One with china tank, low-down washdown closet combination, a lavatory like ——, and regular bath-tub with 4½ combination bath-cocks, and, you know, the regular line of plumbing fixtures, make it for the main floor bath-room and a second story bath-room; regular kitchen sink and laundry trays."

"Charlie, will you try a little experiment for me in this instance, and do just what I tell you to do?" I asked solicitously.

"Try and sell a millionaire's bath-room, I suppose?" he replied.

"No, not a millionaire's bath-room, but one that I suggest, and then use the line of argument which I am going to give you to go along with it, and see how it comes out."

"I'll lose the job," he replied seriously, shaking his head.

"Maybe," I answered, "but it's worth trying, and I believe you can make it win. Will you try?"

"Go ahead, and let me see the cards," he answered.

So I dictated specifications for a built-in bath-tub, with concealed waste and supply fittings with china handles, a china low-down siphon jet, noiseless type, closet combination; a vitreous china pedestal lavatory for both bath-rooms; and left the balance just as he had been accustomed to using. He listened while I was dictating and when I had finished, he quietly informed me "that it would cost too much money."

"Who was mentioning cost, Charlie?" I asked.

He looked at me in surprise for a moment, and then evidently amazed that I didn't follow it up with some explanation, he asked:

"How much more will those fixtures cost me?"

"Charlie," I replied, ignoring his question, "you have three kiddies out to your house, haven't you?"

"You bet," he answered, his eyes brightening.

"Ever have any of them real ill?"

"I nearly lost my oldest boy last year," he said soberly.

"When that boy was sick did you stop to think or ask, how much it was going to *cost* when you wanted a doctor?"

"Not on your life. I telephoned Doctor J. Emerson Ferguson the minute he got bad and he fixed him up quickly."

"I imagined you would do that," I observed, and then remained silent.

After several minutes Charlie came "to," by asking: "Say, boss, what was the idea?"

"Oh, just to get your mind off the price for a minute," I answered casually.

"Price didn't enter your head when you wanted the best, did it?"

"Certainly not, but I don't see the connection."

"You are going to, shortly," I assured him as I busied myself making up a specification booklet, "just think that one over."

When I had the specifications ready, I said, "Charlie, this is the experiment. You take these specifications out to Mr. Jackson and say to him: Mr. Jackson, you asked me to make up a plumbing specification for that house you are going to try to sell to those prospects of yours and I am going to try to help you sell it. You are naturally going to put in all the modern ideas in *your* construction, and make it as attractive as possible, so I have done the same with the plumbing fixtures. I have selected a moderate-priced line of modern plumbing fixtures, which you can use as an added incentive to your people to get the contract. Instead of just plumbing, these specifications will give you the opportunity to say: I don't use any old, out-of-date plumbing in my houses. This kind of plumbing costs me more money than the regular line of plumbing, but it is worth it. This closet combination I use is as noiseless as a water closet can be constructed and the freedom from embarrassment and annoyance is worth considerable. This built-in bath tub is the very latest and is being used in the very finest of homes; being built-in solid eliminates all dirt collecting spaces; the concealed supply and waste avoid the troubles of keeping a lot of brass work clean. The lavatory is the very finest of vitreous china, will not check, nor peel, is easy to keep clean, and is a thing of beauty and a joy forever. Did you get all that?"

"I ought to; I've heard something like that before from you," he replied laughingly.

"Well, am I right or not?" I asked.

"Oh, you're right. That's the kind of a bath-room I would *like* to put in, all right, but—."

"Never mind the 'buts'; now Charlie, remember, that that's the kind of a bath-room *everybody* would *like to have*. The only trouble is, there isn't enough of you plumbers *telling* them they ought to have *that kind* of a bath-room."

"Yes, I know all that, but they won't pay for it," he began.

"Now, Charlie," I interposed, "I thought we were going to try an experiment, and if we are, let's begin right by *presuming* that *this is* just the bath-room they want and *are going to have* and work from that viewpoint."

"You are never going to put it over, if you cannot convince yourself that it can be put over, so we are going to start out right now to presume that this set of specifications was made for their personal selection, this one right here and no other."

"All right," he consented resignedly, "I'll try it."

"Charlie," I admonished him, "that isn't the right spirit. You should have said, 'why, of course, that's just the right thing to do and I'm going to make it stick.'"

Charlie smiled faintly but remained silent, glancing through the specifications.

I felt that if I could arouse his pride in some manner I would more likely get him in the proper state of mind, so I said: "Charlie, your old competitor Schultz put a good one over last week; he sold a dandy bath-room outfit, three fixtures, listing at $200, to one of his customers who started out to buy a bath-room costing $50. Schultz is surely improving as a salesman and I wouldn't be surprised to see that gentleman get some dandy work, when things open up a bit."

That did the work. Schultz was a sore spot with Charlie and he bristled up at once. "Huh, if that Dutchman can sell $200 bath-rooms, I've got a kid that can sell $500 ones," he snorted.

"Send him down to me," I replied. "His daddy doesn't seem to be able to do it."

Charlie got up, put the specifications in his pocket and I could see that the "I'll try" spirit was dead, for a spell at least.

"See you later on this," he said, tapping his coat pocket.

"All right, old boy, bring in the order the next time you come in," I shot at him in parting.

The next time I saw Charlie, he came in with Mr. Jackson, a lady and gentleman.

"Price Didn't Enter Your Head, When You Wanted the Best, Did It?" "Certainly Not, But I Don't See the Connection." "You Are Going to See It, Shortly."

"Just came in to see some fixtures," he said in the way of salutation.

I helped out a little, but not much. Charlie had his lesson "pat" and he sold the job, just as it was written. After Jackson and his customers were gone, Charlie came over and said: "Say, do you know I had an awful argument with that man Jackson, but you see I was right; that plumbing sold the house for him."

"Good work, old boy," I congratulated him. "I knew you could do it, if I could only get you 'untracked' from that price rut you were in."

And the best is yet to be told; Charlie has sold three more like it since then. Every one he sells, sells him another.

Moral—Quit figuring.

Hayfield, Minn.—A. C. Brommerich has opened a plumbing and heating establishment in this town under the name of the Dodge County Heating & Plumbing Co.

Questions and Answers

HOT WATER SUPPLY SYSTEM, CONNECTED TO LAUNDRY STOVE AND COIL IN FURNACE.

Editor "Domestic Engineering":—Herewith you will notice rough sketches of a basement plan, Figs. 1 and 2, showing hot and cold water lines, tanks, etc. We have a 40-gallon range boiler hung to ceiling over a laundry stove, with water back in the stove.

The tank is to be heated by laundry stove in summer, and by coil in furnace in winter time. As the furnace is quite a distance from laundry stove and tank, and all

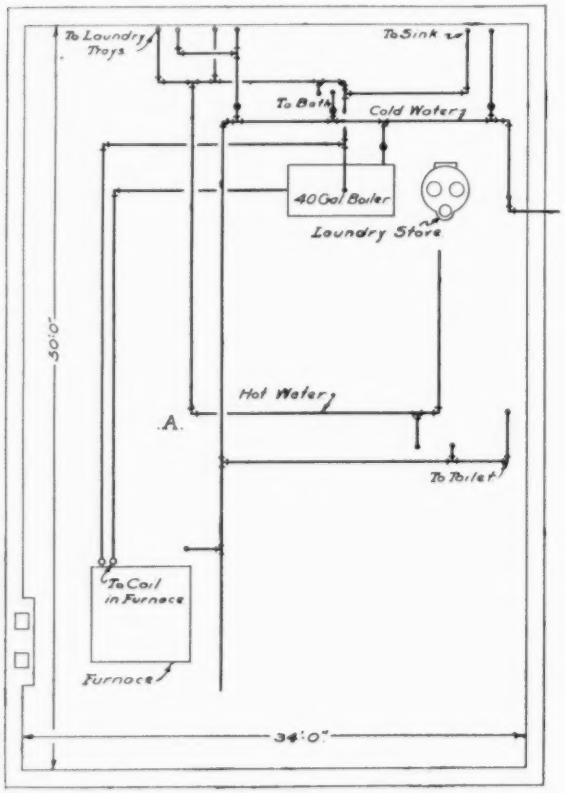


Fig. 1.

pipes must be kept up out of head room, I am in doubt as to whether same is going to give good service or not.

We want to make a circulating hot water line and are anxious to have the proper connections.

Do you think another hot water tank, near the heating boiler, would improve this plan? If so, how should it be connected to the present piping?

Would flow pipe from one boiler have to be carried to the other boiler before connecting into hot water line, to make a circulating job of same?

Flat River, Mo. B. K. I.

We are not quite sure from correspondent's letter whether the furnace coil has already been installed and connections made to 40-gallon boiler, or whether these connections are only being considered. If the former, it seems a simple matter to try them out to see whether such method is going to give satisfactory results. If not yet installed, however, we would question whether good results would come from connections as made in Fig. 1,

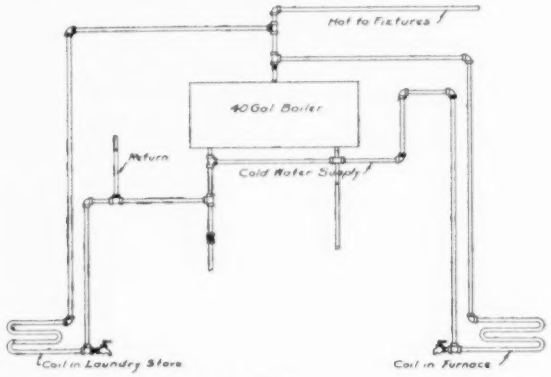


Fig. 2

owing to the long run, 60 or 70 ft., with consequent loss of heat, and the fact that the pipes might have to be run almost level because of the matter of headroom.

The return to the furnace coil from the boiler, as shown in Fig. 2, is raised up, evidently because of the head-room, and this would be objectionable. We would prefer to see the flow pipe from the laundry stove connected into the end of the boiler, rather than as shown. Otherwise the connections of Fig. 2 seem to be O. K., if it were not for the long distance apart of the laundry stove and furnace.

We favor the use of another boiler near the furnace, as indicated by correspondent in Fig. 1. This would allow the flow pipe from this boiler to connect into the present supply piping at the point A, without having to run the length of the cellar. Fig. 3 will show the general idea that we have in mind.

As to providing the system with circulation, Fig. 1 shows circulation carried no nearer the fixtures supplied than the basement ceiling. Generally, where possible, the circulation is taken as near the fixtures as possible. If

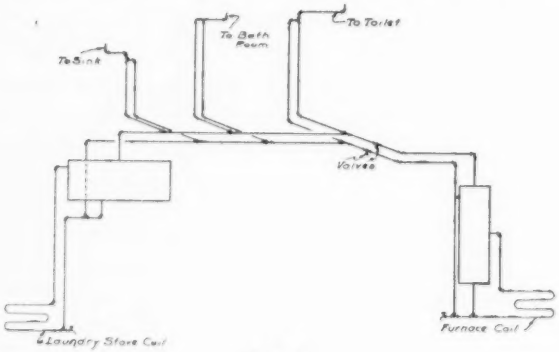


Fig. 3.

this course is followed, we see no other way than to run separate lines of circulation, as in Fig. 3. It is possible, however, that location and construction will allow circulation to bath room and sink to be taken from the same line.

Apparently this is one of those jobs that is hard to pass

upon in all its aspects, without personal knowledge of conditions, but we trust, nevertheless, that what we have suggested will be of assistance to correspondent.

FAULTY HOT WATER SUPPLY SYSTEM.

Editor "Domestic Engineering":—Herewith you will find a sketch (Fig. 1) of a job, which one of our new customers has in his home in the country. He says that he cannot make this system supply hot water.

Will you kindly show us how we can change it, so that it will work right?

Steubenville, O. S. T. H.

It is impossible to make the hot water job work properly with connections made as indicated in your sketch. In order to make water circulate between the heater and the storage tank or the boiler, it is necessary that the top of the boiler be at a higher level than the heater, or that the hot water pipe from the heater be run up to a height sufficient to permit water to circulate in the natural way. This can be done by cutting off the hot

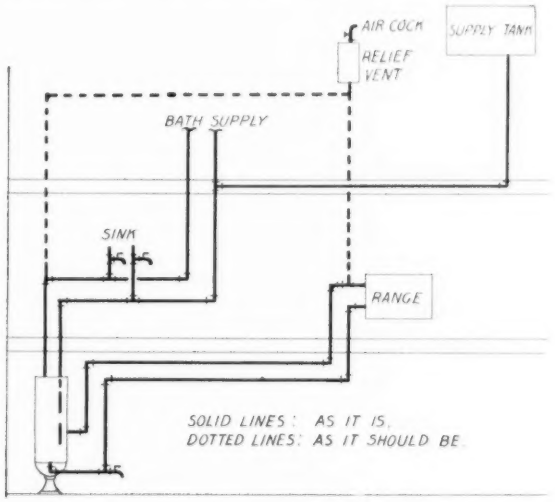


Fig. 1.

water connection between the heater and the storage tank or boiler, and extend it up as indicated in the dotted lines, which we have added to your sketch, Fig. 1. It will be necessary to put on a relief vent with an air cock at the highest point in order to give relief to the air, which collects as the system is filled. An ordinary five or ten-gallon expansion tank may be used, as indicated.

A SICK HOT WATER SUPPLY SYSTEM.

Editor "Domestic Engineering":—The accompanying sketch, Fig. 1, shows location of three bath-rooms on second floor, for which the hot water supply is unsatisfactory, it being necessary to draw a large quantity of water from the hot water faucets before we can get hot water. The range boiler is located on the first floor, directly below the "star" on our sketch. There is no return system used and the hot water pipe from the top of the range boiler goes down into the cellar and then up to the second floor.

The floors are double and of hard wood, and it will be some job to take them up and run a return system. We would like to know if there is any way of curing this job without the return system. If there is a way out of this trouble we would be pleased to see a sketch of any system that would do the work. The range boiler

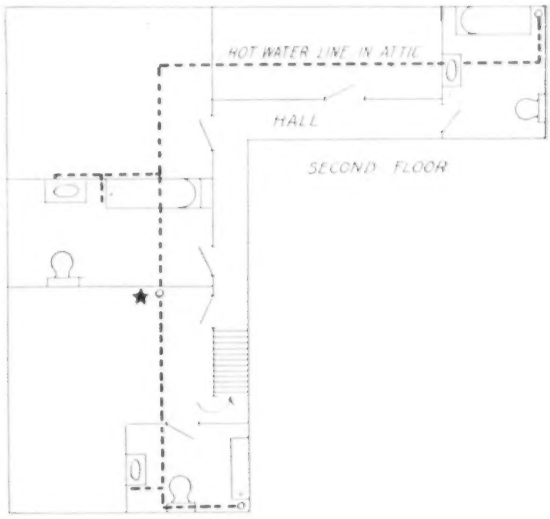


Fig. 1.

is heated from a kitchen range, and there is no gas in the house.

Angola, N. Y. F. E. S.

In order to provide hot water at the fixtures, when the taps are open on the second floor, it is necessary to install a return or circulating pipe. This can be done in the manner suggested in Figs. 1 and 2. The dotted lines in Fig. 1 indicate how the hot water supply should be extended up to and run along in the attic over the different rooms to a point where it may be dropped down to supply the fixtures. Fig. 2 indicates how this may

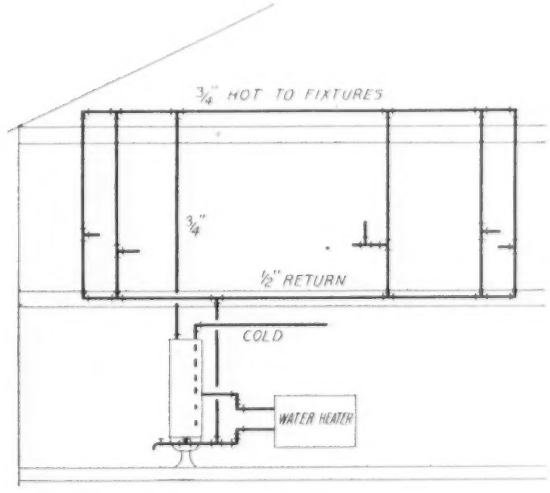


Fig. 2.

be done. It is possible then to utilize the supply pipe, which is obviously laid between the floor and ceiling, for a return, thus avoiding any necessity of tearing up floors except possibly in the bath room for the purpose of making connections.

Champaign's New Plumbing Ordinance

The City of Champaign, Ill., Now Having Over 10,000 Inhabitants, Has Recently Passed This Plumbing Ordinance

An ordinance to provide for the licensing of plumbers and for the alteration, installation, supervision and inspection of plumbing and drainage in the city of Champaign, Ill.

Article 1.

Section 1. General—Be it ordained by the City Council of the City of Campaign, That any person now or hereafter engaging in or working at the business of plumbing in this city, either as a master plumber or employing plumber, or as a journeyman plumber, shall first have a certificate granting him that right in accordance with statute.

Section 2. Separate toilet accommodations for both males and females shall be provided in all school houses, theaters, assembly halls, churches, factories, hotels, lodging houses, stores and office buildings.

Section 3. Septic Tanks. Where no public sewer is provided for the premises, the house sewer must empty into a septic tank located not less than 30 feet from a building of human habitation (except as provided for in Section 4). Overflow from septic tank must be carried to a point where it will connect to outlet or surface drain.

Section 4. Cesspools. Tight or leeching cesspools may be used to receive the discharge from the house sewer, only when written permission to that effect has been secured from the Board of Health.

Each septic tank or cesspool is to be built in accordance with plans on file in the office of the City Plumbing Inspector.

Section 5. Cesspools Prohibited. No cesspool for sewage shall be constructed where a sewer is available, nor shall any connection from such cesspool be made with any sewer.

Cesspools now existing in premises accessible to a sewer and cesspools that may hereafter become accessible to a sewer, must be discontinued, emptied of their contents, cleaned out and be filled with earth or clear cinders and the house sewer shall be disconnected from cesspool, and be reconnected with the public sewer.

Section 6. Location of Cesspools. No leeching cesspool shall be placed within a hundred (100) feet of any surface well, the water of which is used for drinking or culinary purposes.

Cesspools shall be provided with a 20-inch cast iron ring and cover.

Section 7. Vaults. Privy vaults may be constructed upon written consent of Board of Health, only on premises where water and sewer are not accessible.

Vaults now existing on premises accessible to a sewer shall be cleaned out and filled to the top with earth or clean cinders.

Section 8. Location of Vault. No vault, manure pit, open-top cesspool or other reservoir which is used as a privy or receptacle for human or animal excreta shall be located within two feet of any lot or alley line or within 20 feet of any street line or of any building of human habitation or occupancy or within 50 feet of any cistern or well used for drinking or culinary purposes, whether they are located on the same or adjoining premises.

Exception—No privy vault shall be located within 50 feet of any school building.

Vaults and outhouses shall be constructed of such materials and in such manner as to meet the approval of the plumbing inspector and to conform to specifications for their construction on file in his office.

Article 2.

Title 1.—Size of Pipes.

Section 1. Size of Fixture Trap and Wastes With Fixture Equation. The size of trap for a given fixture shall not be less than the following:

Table No. 1.

Name of Fixture.	Size of Trap.	Number of Fixture Units Each Fixture is Equal to.
A		
Drinking Fountain	1¼ in.	½
Fountain Cuspidor	1¼ in.	½
Lavatory	1¼ in.	1
B		
Bath Tub	1½ in.	3
Sitz Tub	1½ in.	3
Wash Sink	1½ in.	4
Pair Laundry Trays	1½ in.	3
Ordinary Slop Sink	1½ in.	3
Kitchen or Pantry Sink	1½ in.	6
Single Wall Urinal	1½ in.	5
C		
Shower Bath	2	6
Public Sink	2	9
Slop Sink Trap Standard	2	9
D		
Pedestal Urinal	M	13
Stall Urinal	M	15
Trough Urinal	M	15
E		
Bidet	M	13
Water Closet	M	15
20 sq. ft. of roof or yard area in horizontal projection		1

M—Manufacturer's standard size.

Section 2. Proportionment of Pipe Sizes. The following table indicates the maximum number of fixtures which can be served by any given size pipe. All dimensions given refer to inside diameter:

Table No. 2.

Size of Pipe Inches	Fixture Units Carried by Horizontal Waste Pipes.	Vertical Waste Pipes.	Vent or Revent Pipes.	Maximum Permissible Developed Length of Vent Pipe Feet.
1¼ in.	1	1	2	25
1½ in.	2	3	6	40
2 in.	8	12	21	60
2½ in.	18	28	60	80
3 in.	40	60	120	100
3½ in.	80	100	250	120
4 in.	120	200	400	140
5 in.	400	512	1000	160
6 in.	800	1050		

An exception to the above table is that the size of a waste pipe serving one bath tub or one bath tub and one lavatory need not be more than 1½ inches.

Fixtures in Classes D and E, Table 1, shall not be connected to a waste pipe smaller than their trap or waste outlet; and no water closet to soil pipe smaller than four inches except that a single water closet, in conditions approved by the plumbing inspector, may waste through a three-inch vertical stack.

After maximum developed length of vent pipe is reached, increase diameter of pipe at each multiple of the maximum length permitted.

Where a waste line changes its direction from vertical to horizontal and extends for a distance of more than 10

feet, the waste line shall be proportioned in accordance with the table for horizontal waste lines.

Section 3. Roof Extensions. All soil and waste pipes shall be extended the full caliber of their greatest diameter to a point at least one foot above the roof and at least five feet when such roof is used for other purposes than weather covering for the building. All vent pipes from two to three inches in size inclusive to be increased one size. In no case shall the vent pipe through the roof be less than two inches in diameter with increaser at least one foot below roof.

The above shall not prevent running 1½-inch vent from a single sink where same is wasted through a branch waste. (See Section 7 of Title 5).

Section 4. Size of Local Vent Pipe Stacks. In the following table the unit of local vent for a single water closet, pedestal urinal, urinal bowl, slop hopper or sink and to each three feet of urinal trough or gutter shall be a 2-inch pipe.

Size of Pipe	Maximum Developed Length of Main in Feet	Maximum Number of Fixtures Vented by a Branch	Maximum Number of Fixtures Vented by a Main
2	40	1	1
3	100	3	6
4	150	6	12

The dimensions given refer to the inside diameter of the pipe. After the maximum developed length of vent pipe is reached, increase the diameter of the pipe at each multiple of the maximum length permitted.

Title 2.—Materials, Quality and Weights.

Section 1. Earthenware Pipes. All earthenware pipes and fittings shall be of the hub and spigot pattern of the grade known as number one to the trade, cylindrical in section, thoroughly vitrified throughout the thickness of the pipe, and thoroughly salt glazed over the entire inner and outer surfaces.

Each length shall be of a uniform caliber, smooth bore throughout, without twist or wind and free from fire cracks, blisters or flaws.

Earthenware pipe used for tile drains may be without hub or socket and may be either cylindrical or "D" shaped in section.

Section 2. Cast Iron Pipes. All cast iron pipes and fittings shall be sound, cylindrical and smooth, free from cracks, sand or blow holes, and of a uniform thickness and not lighter than the commercial grade known as "extra heavy" and shall be coated at the factory both inside and out with coal tar or asphaltum applied hot by immersion.

The following weights per linear foot including hubs will be accepted as complying with the ordinance as to weight of extra heavy pipe:

Diameter of Pipe, Inches	Weight per Foot, Pounds
2	5½
3	9½
4	13
5	17
6	20
7	27
8	33½

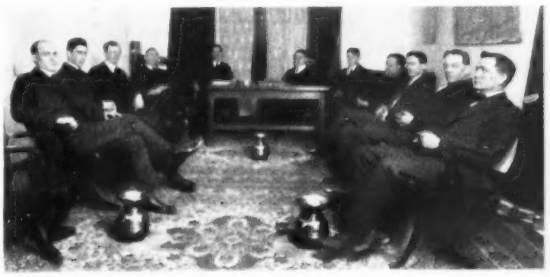
All fittings shall conform to the Naco standardized specifications for soil pipe fittings. A variation of 5 per cent in any one fitting being permissible; but the average of 10 fittings selected at random shall conform in weight to the standardized specifications.

Section 3. Wrought Pipe. All wrought iron pipe and nipples used for soil, waste and vent pipes shall be galvanized full weight and the malleable fittings galvanized, the screwed cast iron or drainage fittings galvanized or coated inside and out with asphaltum hot by immersion.

All wrought iron pipes must be lap welded and of not less than the following thickness and weights:

Size, Inches	Thickness, Inches	Weight per Foot, Pounds
1½	.145	2.73
2	.154	3.68
2½	.203	5.82
3	.216	7.62
3½	.226	9.20
4	.237	10.89
4½	.247	12.65
5	.258	14.81
6	.280	19.19

Section 4. Lead Pipe. All pipe used for branch, soil, waste, vent or flush pipes shall be of best quality of



Members of the Master Plumbers' Association of Champaign, Ill., who are deeply interested in the Plumbing Ordinance published on these pages.

drawn pipe of not less weight per lineal foot than shown in the following tables:

Internal Diameter, Inches	Weight per Lineal Foot Pounds	Ounces
1¼	3	
1½	4	
2	5	
3	6	3
4	10	

Section 5. Brass Pipe and Fittings. Brass pipe for soil, waste and vent pipes shall be thoroughly annealed, seamless drawn or brazed tubing of standard iron pipe gauge, having weight and outside diameter of not less than the following:

Nominal Diameter, Inches	Thickness, Inches	Weight, Pounds per Lineal Foot
1¼	.14	2.72
1½	.14	2.84
2	.15	3.82
2½	.20	6.08
3	.21	7.92
4	.23	11.29

For flush and local vent No. 18 gauge may be used. Drawn tubing only shall be used for the larger sizes, 2½ inches to 4 inches, and brazed tubing may be used for the smaller sizes, 1¼ to 2 inches. Brass fittings shall be good quality cast brass having a thickness given above for the corresponding brass pipe. The thickness of the tapped ends to be one and one-half (1½) times the thickness of the corresponding pipe.

Section 6. Sheet lead. Sheet lead for roof flashings shall not weigh less than four (4) pounds per square foot.

(To be continued.)

The street car was crowded and a gentleman with kindly twinkles in his eyes took 5-year old Tom upon his lap.

"This will be better than standing, won't it, my boy?" he suggested.

"Uh, huh," Tom replied, without enthusiasm. He had rather enjoyed lurching about the aisle, just like his father.

"But you want to be careful that I don't pick your pocket," the gentleman cautioned, in a whisper.

"Can't," Tom retorted, his voice somewhat muffled. "Soon as I saw you lookin' at me I put my penny in my mouth."—Judge.

March 20 and 21, 1916—Twenty-fifth annual convention of the Kansas Master Plumbers' Association, at Pittsburg, Kan.

March 21, 1916.—Annual convention of West Virginia Master Plumbers' Association, at Parkersburg, W. Va.

March 24 and 25, 1916.—Annual convention of Montana Master Plumbers' Association, at Butte, Mont.

April 7 and 8, 1916.—Twenty-first annual convention of the Washington State Association of Master Plumbers, at Seattle, Wash., with headquarters at the Seattle Commercial Club.

April 10, 1916.—Annual convention Arkansas Association of Master Plumbers, at Texarkana, Ark.

April 11 and 12, 1916.—Annual convention of the Oklahoma Master Plumbers' Association, at Muskogee, Okla.

May 8 and 9, 1916.—Annual meeting of the National Pipe and Supplies Association, at Pittsburgh, Pa., with headquarters at William Penn Hotel.

May 8, 9 and 10, 1916.—Annual convention of Kentucky Master Plumbers' Association, at Louisville, Ky.

May 9 and 10, 1916.—The annual convention of the Pennsylvania State Association of Master Plumbers, at Pittsburgh, Pa., with headquarters at the Fort Pitt Hotel.

May 16, 17, 18 and 19, 1916.—Eighth annual convention of the National District Heating Association, at New York City, with headquarters at the Hotel Martinique, Thirty-second Street and Broadway.

April 10 and 11, 1916.—Annual convention of the Massachusetts State Association of Master Plumbers, at Boston, with headquarters at the American House.

May 22 and 23, 1916.—Fifteenth annual convention of the New Jersey State Association of Master Plumbers, at Newark, N. J., the sessions to be held at Columbus Institute Hall.

May 22, 23 and 24, 1916.—Annual convention of the State Association of Master Plumbers of California, at Yosemite Valley, Cal.

June 5 and 6, 1916.—Annual convention of the Georgia Master Plumbers' Association, at Tybee Island, Ga.

June 20, 21 and 22, 1916.—Thirty-fourth annual convention of the National Association of Master Plumbers, at Atlantic City, N. J., with headquarters at "The Breakers."

July 9-13, 1916.—The World's Salesmanship Congress, at Detroit, Mich.

MARYLAND MASTER PLUMBERS' ANNUAL MEETING.

The Master Plumbers' Association of the State of Maryland held its annual meeting in Baltimore, Md., on Thursday evening, March 9th, and elected the following officers for the ensuing year: President, John Kirkley, Baltimore; first vice-president, August V. Eidman, Baltimore; second vice-president, Patrick Trainor, Baltimore; recording secretary, George Koerner, 424 North Gay Street, Baltimore; financial secretary, Chas. H. Frederick, Baltimore; treasurer, Daniel N. Sullivan, Baltimore. The following were re-elected to serve on the Board of Directors: F. F. Breyer, M. A. Schanze, Robert Rainey, William G. Henkle and Lloyd E. Mitchell, all of Baltimore. The only change in the officers for the ensuing year is that of recording secretary, A. L. Ahern being obliged to resign this office on account of press of business. The following were elected delegates to the National Convention: Lloyd E. Mitchell, Charles H. Frederick, T. Howard Boland, James F. P. Carey, Samuel E. Houck, Allen W. Beam, Frank J. Knell, Thomas J. Thaler, Robert Rainey, John Trainor, Albert M. Schanze, A. J. Ahern, Edward Wehrhahn, and William H. Mitchell, all of Baltimore; John B. Macfarlane, Malcolm S. Jones and Joseph Habig, of Cumberland, and Charles C. Brown, of Bel Air.

NEW YORK STATE MASTER PLUMBERS ELECT OFFICERS.

The New York State Association of Master Plumbers held its annual meeting at Brooklyn, N. Y., on Tuesday, Wednesday and Thursday, March 14th, 15th and 16th, with headquarters at Hotel Bossert, and with an exceptionally good attendance. Among the notable guests who addressed the convention was Jas. J. Cassedy, of Cambridge, Mass., president of the National Association of Master Plumbers. The convention elected the following officers for the ensuing year: President, T. F. Nolan, Albany; vice-president, J. L. Murphy, Manhattan; secretary, J. H. Doody, Albany; treasurer, Charles Campbell, Watertown; directors, H. M. Saunders, Rochester; J. J. Dixon and M. J. Kennedy, of Brooklyn; S. H. Welsh, Bronx; G. H. Drake, Buffalo, and J. F. Rogers, Queens Borough. The new president was empowered to appoint three additional directors.

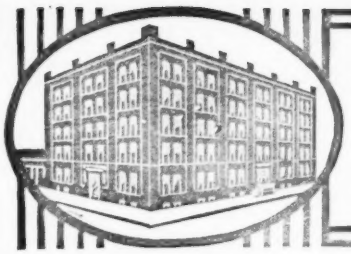
A complete report of this convention will appear in next week's issue of "Domestic Engineering."

ANNUAL BANQUET OF ROCHESTER MASTER PLUMBERS' ASSOCIATION.

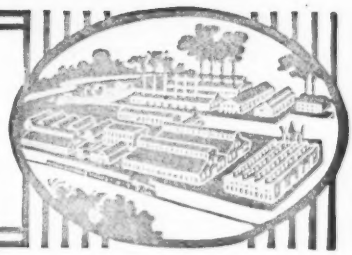
About forty members, accompanied by their wives, attended the annual banquet of the Master Plumbers' Association of Rochester, N. Y., which was held on Thursday evening, March 2nd, in Teall's Hall in that city. Past State President John A. Creelman acted as toastmaster for the occasion, the principal address being delivered by President Patrick J. Donovan. The other speakers were F. E. Fladd, Louis J. Yauchzi, Vice-President Frank J. Rossney, Secretary George H. Caffery, Past President A. J. Heinzle, Edward G. Snyder, Horace F. Jones and Louis Ernst. After the dinner the floor was cleared for dancing, and all joined in the declaration that the affair was the best the association has ever held.

Green Bay, Wis.—Wm. J. Hood is making arrangements to open a plumbing establishment on Cherry Street in this city.

Oelwein, Ia.—Marshall & Baumgartner is the style of a firm which recently opened an up-to-date plumbing and heating establishment at 11 First Street South, in this city. The firm, which is composed of L. R. Marshall and A. Baumgartner, would like to receive catalogues from jobbers and manufacturers of plumbing and heating goods.



Among the Wholesalers and Manufacturers



COMPANIES RECENTLY INCORPORATED.

The Plumbers Supply Co., of 721 Grant Street, Pittsburgh, Pa., has just been incorporated under laws of Delaware. Jno. Fitzgerald is president of this company.

The Coburn-Hardie Manufacturing Co., of 1059 Camp Street, New Orleans, La., has been incorporated with a capital stock of $40,000, to manufacture plumbing specialties.

The Hoosier Plumbing Co., of Indianapolis, Ind., has been incorporated with a capital of $1,000, to manufacture plumbing specialties. The incorporators are Roy F. Rich, Lewis Wallace and John T. Jameson.

The Unit System of Heating & Manufacturing Co., of Pasadena, Cal., has been incorporated with a capital of $50,000, to manufacture heating specialties. The incorporators are: Charles Atherton, S. L. Roland, J. P. Chandler and H. W. Wright.

The Hopewell Self-Cleaning Trap Co., of New York City, has been incorporated with a capital of $100,000, to manufacture plumbing specialties. The incorporators are D. E. Walton and W. H. Dean, of 1270 Broadway; G. F. Brelsford, of 1280 Broadway, New York City.

The Plumbing & Mill Supply Co. has been incorporated with a capital stock of $50,000 and has started in business at 840-844 Baronne Street, New Orleans, La., in a building which was purchased for $15,000 one of the first days in March by H. J. Veith, until a few weeks ago connected with the Fairbanks Co., of that city. The following gentlemen are interested in the new venture: Henry J. Veith, Fred G. Veith, John M. Boyden, Eugene Buckmaster and W. H. Prescott. It is understood that officers of the new company will be elected later in the month.

THE ANNUAL MEETING OF PLUMBING SUPPLY SALESMEN IN MAINE.

The annual meeting and banquet of the Plumbing, Steam and Metal Salesmen's Association of Maine, which includes in its membership all salesmen in these lines who travel in that State, was held at the Casino, Riverton Park, Portland, Me., on Monday, March 13th. The members began to gather early in the afternoon, and by the time the dinner hour arrived at 6:30 there were about forty on hand. The business session was brief and resulted in the choice of the following officers: President, J. M. Griffith, of South Lindboro, N. H.; vice-presidents, Frank S. Billings, of Portland, Herbert S. Wakeley, of Bangor, and D. J. Dever, of New York; treasurer, A. M. Rosebrook, of Portland; financial secretary, W. F. Snow, of Portland; recording secretary, Ellsworth F. Hayden, of Portland.

The new president of the association is a native of Orneville, O., and in his younger days was a school teacher. In 1899 he located in Boston in the steam heating and plumbing business and later became a traveling man for the Boston branch of Crane Co. Since 1910 he has covered Maine for the Thompson-Durkee Co., of Boston.

After the business session the company gathered about the dinner tables and an excellent banquet was enjoyed. Formal speaking was "out of order" and the members just enjoyed a good time in an informal way. The gathering was declared to have been one of the most interesting and socially successful that the organization has ever held.

Among those present were: N. M. Doten, Everett S. Mann, C. S. Mallard, Byron E. Near, George W. Paul, C. B. Brown, H. S. Combs and H. P. Files, of Boston; James M. Clark, J. Warren Chase, George H. Laughton, C. R. Nelson, A. W. Marston, R. C. Parker, J. H. Douglass, Charles W. Carr, Edmund Henry and B. J. Harmon, of Portland; J. E. Herrick, of Beverly, Mass.; C. A. Voter, of Nashua, N. H.; I. S. Fogg, of Westbrook, Me., and George L. Bickford, of Auburn, Me.

FOR UNIVERSAL ESTABLISHMENT OF PUBLIC COMFORT STATIONS.

The National Committee of the Confederated Supply Associations to Start Vigorous Movement for the Establishment of Adequate Comfort Station Facilities Throughout the Country.

L. O. Koven, of New York City, president of the Eastern Supply Association and treasurer of the National Committee of the Confederated Supply Associations, gave a luncheon to members of the trade press at Hahn's in New York City on Wednesday, March 8th, at which he announced the launching of a movement on the part of the National Committee to encourage a wide-spread interest among the general public and the trade in the need of public comfort stations in the United States, so that a universal establishment of such conveniences in sufficient numbers might be realized.

Mr. Koven pointed out that the National Committee had, not long ago, taken up the subject, and while some publicity was given to the movement through the efforts of Secretary Frank S. Hanley and the publication of small pamphlets, no great amount of "push" was put into the project. The promotion, however, of the present movement will be on a much larger scale than ever before attempted, and new methods will be employed to accomplish the purpose.

This comes as a result of a discussion of the subject at the last meeting of the committee, by men who know of the great need for comfort stations, and these men, Mr. Koven said, have contributed to a fund to carry on the work. It is the intention of the committee to employ an expert to study the subject thoroughly and lecture before health boards, city clubs, churches, improvement associations and other public bodies. The object of the committee is purely humanitarian and the aim is to bring

about the construction of comfort stations in large numbers for the benefit of the general public. The committee in its propaganda will recommend well constructed and equipped stations of the less costly type, eliminating the frills and ornamentation of expensive buildings and thereby make possible the greatest good for the greatest number.

Through the campaign as proposed, and the public press, it is believed the general public can be sufficiently interested in the movement to bring about the realization of one of the greatest benefits the country has ever known. It was pointed out that while the United States leads the world in sanitary equipment of such few comfort stations as we have here, Europe is far in advance of us in providing adequate accommodations of this character, and though from an esthetic and sanitary standpoint her stations would not be tolerated in this country, they are, however, practical, and accomplish the purpose. Among other matters discussed in connection with the possibilities of the campaign, it was pointed out that country school houses along frequented highways could be made accessible for public relief.

The trade papers, through their representatives present at the luncheon, pledged their aid to Mr. Koven in furthering the campaign of publicity on the subject.

MOVE TO LARGER QUARTERS.

The Ashton Manufacturing Co., of Newark, N. J., is moving from Nevada Street to 184-186 Emmet Street, in that city, where improved and larger quarters have been acquired.

RAILWAY TRAIN HEATING DISCUSSED AT MEETING OF ILLINOIS CHAPTER.

The heating and ventilation of railway coaches, Pullman cars and street cars, were the subjects of discussion at the March meeting and dinner of the Illinois Chapter of the American Society of Heating and Ventilating Engineers, held on Monday evening, March 13th, at the Morrison hotel, Chicago.

Elmer W. Rietz, of the Chicago Car Heating Co., and D. I. Cook of the Chapter, delivered illustrated talks, and covered the topics of the evening in a very thorough manner.

The first speaker told of the earlier types of heating apparatus for coaches and Pullman cars, and he spoke of the many difficulties which were encountered, until finally a vapor system was decided upon, the one now in use in practically all railway trains throughout the country.

"Through the use of the vapor system," said he, "there is no danger of a freeze-up at any time, and we could open all the windows in the cars in weather thirty degrees below zero, and there would still be no danger of a freeze-up, and, in fact, we have never heard of a freeze-up under this system.

"In each car we have ten pipes seventy feet in length, which are controlled by four valves, and we use more ventilators, rather than shut off the heat in the car during cold weather."

Mr. Rietz said that an inspection service is maintained, and that trainmen at all points of the road are given instructions in the efficient handling of this heating system.

D. I. Cook then spoke of street car ventilation, and showed stereopticon slides of defective street car ventilation.

Prior to the introduction of the speakers, President Hogan, of the Chapter, announced that the invitation extended to the parent body to hold its summer meeting in Chicago this year still remains unaccepted, and that the society is undecided as to whether it will accept Detroit's or Chicago's invitation.

Approximately fifty members, including several guests, were present at the meeting.

EASTERN PENNSYLVANIA CHAPTER OF A. S. H. & V. E. ORGANIZED AT PHILADELPHIA.

A new chapter of the American Society of Heating and Ventilating Engineers, to be known as the Eastern Pennsylvania Chapter, was organized at a meeting at Kruglers Restaurant, Philadelphia, on Wednesday, March 8th. A charter for the chapter had been granted on the application of thirty-four members in Pennsylvania.

The preliminary organization work had been done by a committee appointed for the purpose and composed of G. W. Barr, E. T. Murphy, J. T. J. Mellon and W. J. Braemer.

A dinner preceded the work of organization and each member and guest was supplied with a set of "Plans and Specifications" Covering Organization Banquet of the Eastern Pennsylvania Chapter of American Society of Heating and Ventilating Engineers. They were gotten up in the regulation style, headed with the following paragraph of general specifications: "The work to be done under this specification and the accompanying plans include the installation of a complete feed with all the tools and appliances necessary for the manipulation of same, and also the construction of an efficient and permanent organization looking toward the heating and ventilating of Eastern Pennsylvania with Camden as a bi-product."

The rest of the specification, covering four pages, referred to the various branches of the job.

Foreman of toasts, as the specification designated him, G. W. Barr, following the dinner, introduced Isaac H. Francis, A. K. Ohmes, John D. Cassell, Homer Addams and Frank K. Chew.

As guests of the evening were: Mr. Addams, treasurer of the American Society, Frank K. Chew and W. W. Schmidt, of New York. The others present were: Eilert Nesdahl, E. Kessler Webster, H. C. Beatty, Herbert Terrell, W. G. R. Braemer, G. W. Barr, E. S. Berry, J. D. Cassell, August Geiger, A. S. Mappett, J. T. J. Mellon, W. G. Culbert, B. H. Davis, R. L. Young, W. W. Rice, Geo. Boon, A. G. Goldsmith, I. F. Grumbein, E. T. Murphy, Lee Nusbaum, Wm. H. Timm, R. D. Burns, H. P. Gant, W. J. Robinson, Kennedy Duff, A. C. Edgar, Horace A. Kottcamp and Joseph A. Waddell, Jr.

In opening the work of organization, Mr. Barr stated that it was a source of great gratification to the members of the American Society to celebrate the formation of the Eastern Pennsylvania Chapter. He had read, he said, the first volume of the Society's proceedings and he reviewed the first meeting of the Society back in 1895, and said he was glad to note the remarkable growth. The excellent work done by the Society, he said, was a matter of pride of every member and had prompted the effort to secure the new charter.

J. D. Cassell paid tribute to the work on preliminary arrangement. He pointed out that the engineers were not sufficiently ambitious to make their value known to the general public. He contended they were much too modest and retiring in not advertising their wonderful achievements accomplished as a result of their study and service, and too often made no claim for accomplishments of which they might justly be proud. He urged those present to bring to the attention of those in the field, the

advantage of participation in membership, in the Society, and to take a co-operative part in its work.

Homer Addams said every officer of the Society would be glad to hear him say that a welcome awaits establishment of the new chapter. He said the Society has a great future, and he was sure it would be widely useful. He thought it gratifying that thirty-four out of forty-three members in the territory had signified their intention to take part in the work of the chapter. The achievements of the Society, he added, include the production of literature that cannot be duplicated. He pointed out that J. J. Blackmore, who had been a strong executive, had returned to commercial life, and dwelt upon the ability of C. W. Obert, who will succeed Mr. Blackmore as secretary of the Society. Mr. Obert, he said, has won the esteem of those who have worked with him as secretary of the boiler code committee of the American Society of Mechanical Engineers, to the extent that Dr. Jacobus, president of the A. S. M. E., and J. A. Stevens, chairman of the above committee, have applied for membership in the American Society of Heating and Ventilating Engineers. He also said that the work Mr. Obert did on the boiler code was greatly appreciated by his society.

A. C. Edgar said he was proud to have been present at the early meeting of the Society, but it was so long ago and its achievements had been so great since then, that he forgot everything that transpired at it. He pledged his support to the new chapter.

Frank K. Chew recounted the history of the several chapters and the work of the Society. He said that when the Illinois Chapter was first considered, it took considerable urging before the charter was granted, but it proved a valuable factor in the field in Chicago and brought many valuable papers to the Society. He mentioned the report of the Committee of Welfare and Ethics as being well worthy of careful study. He also urged that the engineer bring his light out from under the bushel, and let the public know that he could increase their comforts. The fees and ethics of the engineer he said, in this particular field, both needed an uplift. Mr. Chew paid tribute to Secretaries Mackay, Macon, Scott and Blackmore, and said he felt that Mr. Obert, who is about to take up the work, would do it in a way that would further the aims and purposes of the organization.

Letters of regret over their inability to attend were received from Harry M. Hart, president of the American Society, Stewart A. Jellett and others.

Mr. Barr was made temporary chairman of the meeting, and appointed as a nominating committee: A. C. Edgar, G. L. Gant and H. Beatty.

Report on charter and organization made by E. T. Murphy showed how the preliminary work had been done.

The report of W. G. Braemer after discussion led to the selection of the Engineers' Club, 1317 Spruce Street, Philadelphia, as the place for holding subsequent meetings of the chapter, which will be called on the second Thursday each month.

The officers elected were: President, J. G. Cassell; vice-president, I. H. Francis; secretary, G. W. Barr; treasurer, Kennedy Duff; board of governors, J. T. J. Mellon, W. G. Braemer and E. T. Murphy.

Mr. Cassell in accepting office said he would exact from the members the best that they can do to achieve the lofty purposes of the chapter. Mr. Barr said he would spare no efforts to make it a success. The other officers also pledged their support to the ambitious purpose that had been outlined.

FIRST "WORLD'S SALESMANSHIP CONGRESS" TO BE HELD IN DETROIT.

The World's Salesmanship Congress, which it to be held July 9 to 13, 1916, at Detroit, Mich., is the first of a series of annual conventions of salesmen and executives in every line of business activity. Every country in the world will be represented in the congress, and those who have been instrumental in calling this convention feel assured that this is the first step in bringing the profession of salesmanship to the high standard to which it is entitled among business organizations of the world. The congress is the outgrowth of the Salesmanship Club of Detroit, and lists among its members the names of salesmen and sales managers known the whole world over wherever business is transacted. For instance, there is hardly a business man in this country who has not heard of such men as John Wanamaker, of The Wanamaker Stores; Norval A. Hawkins, of Ford Motor Co.; H. M. Jewett, of Page-Detroit Motor Car Co.; Edward A. Woods, President National Association of Life Underwriters, Pittsburgh; B. P. Neff, Duluth, Minn., and A. C. Secrest, Cleveland, and Theodore Monroe, Lisbon, O., who are on the general committee which has the World's Congress in charge. It is the belief of these master salesmen that every city that has any commercial activity whatever should have a salesmanship club of its own, and that the salesmen of the world should have some means of learning and acquiring the new ideas and thoughts of salesmanship, the same as the advertising men, the merchants and the manufacturers have at the present time.

FOURTH ANNUAL DINNER OF NEW YORK SCHOOL OF HEATING AND VENTILATING.

The purpose of Charles A. Fuller to provide the necessary theoretical training for the young man engaged in the heating and ventilating line, through the New York School of Heating and Ventilating, of which he is the head, was praised by some one hundred and fifty students and guests at the fourth annual dinner of the school, held at Stewart's, Park Place, New York City, on Monday evening, March 13th.

The party congregated early in the evening, and after impromptu discussions, a dinner of some fifteen courses was enjoyed. M. J. Sage was toastmaster. Frank K. Chew, in reviewing the work of Mr. Fuller, stated that the school has filled a long felt want in the profession. The man in the ranks who entered the business as a salesman or in other ways, without theory, is now able to acquire the scientific knowledge and training first hand, a privilege denied the older men of the profession.

Dr. Milton W. Franklin spoke interestingly and entertainingly on the subject of Americanism.

W. H. Driscoll told the students of the time when he entered the business without sufficient knowledge of the heat unit to detect it in a glass bottle. Everything was done by the rule of thumb. Radiation was guessed at, pipe sizes were determined by tossing a coin, and boiler sizes were based on the last job. He said all the knowledge and science he acquired since then he had to dig up for himself, and what it took him ten or twenty years to acquire, the younger men of today are able to get in a few months' study, through the foresight of Mr. Fuller.

J. J. Blackmore, former secretary of the American Society of Heating and Ventilating Engineers, Homer Addams, H. A. Pratt, C. W. Obert, the new secretary of the American Society, James A. Donnelly and A. H. Bosworth were among the speakers.

Mr. Fuller spoke of the work and possibilities of the

school and stated that he hoped soon to be able to announce that graduation from the school will be recognized as qualification for membership in the American Society of Heating and Ventilating Engineers. Another end toward which he is working, he said, is to establish an advanced course as an added feature of the school's curriculum.

Albert D. Hoxie reviewed the organization work of the Alumni Association.

Another speaker of the evening, a favorite not only of the heating class, but of the entire trade, was Jack Armour.

The affair this year was full of spirit and good fellowship, and quite in contrast with the first dinner of the class at which only eight were present. Each of the banqueteers was provided with a paper hat and a souvenir menu.

M. J. Sage and Albert D. Hoxie composed the committee which arranged the affair.

BUILDING OPERATIONS FOR FEBRUARY.

Building operations throughout the country, as reflected by the summaries of permits issued in the principal cities, made an altogether satisfactory showing for the month of February. The comparative statement with January is also gratifying. According to official figures received by "The American Contractor," Chicago, the building permits granted during February in 76 of the largest cities of the country totaled $53,219,098, as against $44,280,506 for February last year, an increase of 20 per cent. In actual figures February exceeds January, the aggregate of which was $51,697,497, although January's increase in percentage over January, 1915, was 35 per cent. The comparative gains are widely scattered and are not chargeable, as they are sometimes, to special activities in the larger cities. Of the 76 cities on the list below, 54 show gains. In spite of the most active efforts being made in New York to radically readjust its construction policies, that city shows only a slight comparative loss as against February, last year. The combined showing for January and February is excellent, a total of $103,086,065, as compared with $81,512,340 for the first two months of 1915, an increase of 26 per cent. The detailed figures for February, 1916, as compared with February, 1915, follow:

	Feb., 1916.	Feb., 1915.	Per Cent Gain.	Per Cent Loss.
Akron	$ 435,575	$ 110,260	295	....
Albany	169,230	277,115	....	39
Atlanta	265,599	471,961	....	44
Baltimore	1,438,263	977,365	48	....
Birmingham	150,965	136,710	10	....
Boston	4,591,000	3,587,000	28	....
Bridgeport	648,908	241,950	168	....
Buffalo	684,000	307,000	123	....
Cedar Rapids	38,000	133,000	....	71
Chicago	7,354,200	4,701,500	56	....
Cincinnati	596,120	499,645	19	....
Cleveland	1,552,725	1,733,925	....	11
Columbus	314,225	153,350	105	....
Dallas	216,212	324,185	....	33
Dayton	99,749	14,453	591	....
Denver	472,380	165,070	186	....
Des Moines	67,000	65,145	3	....
Detroit	2,186,960	1,307,215	67	....
Duluth	172,172	89,647	92	....
East Orange	31,325	182,607	....	83
Evansville	51,100	85,435	....	40
Ft. Wayne	74,950	80,100	....	6
Grand Rapids	114,740	104,300	10	....
Harrisburg	31,460	38,425	....	18
Hartford	387,820	151,600	156	....
Indianapolis	406,531	307,750	32	....
Kansas City	464,760	896,330	....	48
Lincoln	57,800	31,560	83	....
Little Rock	67,061	37,095	81	....
Los Angeles	976,378	560,697	74	....
Louisville	941,330	319,520	195	....
Manchester	125,055	40,065	212	....
Memphis	205,565	101,735	102	....
Milwaukee	753,990	409,056	84	....
Minneapolis	823,960	811,495	2	....
Montclair	26,725	65,926	....	60
Nashville	241,306	65,705	267	....
Newark	246,838	955,391	....	74
New Haven	352,040	674,855	....	74
New Orleans	116,889	97,323	20	....
New York City	10,344,482	12,558,981	....	18
Manhattan	3,452,130	5,899,930	....	41
Bronx	1,649,457	2,657,934	....	38
Brooklyn	3,600,693	2,267,014	59	....
Borough of Queens	1,545,397	1,582,724	....	2
Richmond	96,805	151,379	....	36
Oakland	338,336	328,934	3	....
Oklahoma	62,580	42,780	46	....
Omaha	815,692	84,100	870	....
Paterson	87,527	57,217	53	....
Peoria	200,250	51,750	287	....
Philadelphia	2,437,750	2,574,930	....	5
Pittsburgh	1,321,686	608,644	117	....
Portland	406,615	311,740	30	....
Richmond	372,907	259,184	44	....
Rochester	691,433	382,607	81	....
St. Joseph	82,190	18,751	338	....
St. Louis	1,180,334	701,062	68	....
St. Paul	426,694	797,054	....	46
San Antonio	84,110	113,595	....	26
San Diego	164,890	95,990	72	....
San Francisco	1,356,915	807,936	68	....
Schenectady	21,476	3,825	461	....
Scranton	118,817	43,545	173	....
Seattle	598,615	353,880	69	....
Shreveport	45,046	41,576	8	....
Sioux City	569,400	36,150	1475	....
South Bend	177,085	17,455	915	....
Spokane	202,660	21,725	833	....
Springfield, Ill.	137,300	65,900	108	....
Springfield, Mass.	470,185	692,795	....	32
Syracuse	115,577	160,383	....	28
Tacoma	63,801	56,751	12	....
Toledo	700,781	454,607	54	....
Topeka	10,575	37,770	....	72
Troy	14,235	47,445	....	70
Utica, N. Y.	226,175	7,975	2736	....
Washington	1,129,300	890,833	27	....
Wichita	81,550	64,825	26	....
Wilkes-Barre	36,748	70,125	....	48
Worcester	174,473	104,220	67	....
Total	$53,219,098	$44,280,506	20	....

Walter H. Wilson, secretary of the Minneapolis Heat Regulator Co., of Minneapolis, Minn., was in Chicago this week and called on some of his friends in the trade.

A. G. Dyer, of the I. X. L. Pump & Manufacturing Co., of Philadelphia, was seen in Scranton, Pa., last week, in weather which made him think of frost-proof fixtures.

Fred Hoffman, of the New Jersey China Pottery Co., Trenton, N. J., was in Reading, Pa., last week. He told a "Domestic Engineering" representative that business looked good to him.

Charles W. Cromb, of the Borden Co., of Warren, O., was encountered in Philadelphia this week by a representative of "Domestic Engineering." He was in a very optimistic mood, superinduced by a large number of orders for his company's tools.

A man from Detroit has just one hobby—Detroit. On land or sea, or wherever he may be, his Wolverine fancy

turns lightly and blithely to thoughts of his "Mish-e-gan" home. To him Detroit is the hub of the universe, the bee-hive of the West, and the one beautiful and irresistible spot worth while. The man who boosts and never knocks his home town is the true-blue progressive, and we salute him, and we tell him that Detroit is a winner which has developed like a growing boy taking on a great deal of fat, but of the kind which represents quality as well as quantity. And those de luxe gentlemen who have condescended to leave that city and come among us have educated us to make a lot of our checks payable to Detroit in exchange for fleet moving vehicles that keep our bank accounts in a lean condition, ever and anon. We

James Harvey, President of the A. Harvey's Sons Mfg. Co., Detroit, Mich.

know one dyed-in-the-wool Detroiter, who does not apparently care for travel except in pursuit of business. Verily, he can see no other reason. Therefore, if you should see a prosperous, well-groomed individual with the initials, J. H., on his baggage, seated or standing in a prominent hotel lobby, and watching the clock, you may bet safe that he is a citizen of the "City of the Straits," waiting for the next train home. And if you are interested in plumbing and heating supplies, just step up to him, and ask him, if he isn't James Harvey, well known for years to the trade and president of the A. Harvey's Sons Mfg. Co., manufacturers and jobbers of plumbing and heating supplies, Detroit, Mich. Try this some time, and you will find you have guessed right.

EASTERN SPECIALTY MFG. CO.'S NEW CATALOGUE.

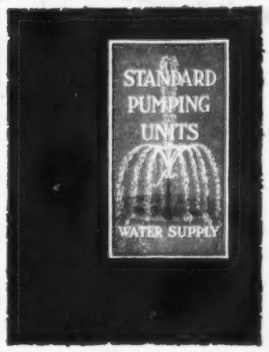
The Eastern Specialty Mfg. Co., of Scranton, Pa., has just issued "Catalogue C," illustrating and describing its products, the most notable of which are bath seats, medicine cabinets, towel bars, tooth brush holders, shower yokes, bath room mirrors, soap holders, glass shelves, liquid soap containers, bath sprays, shower mixers, name plates and expansion bolts. The catalogue consists of 60 pages, 5 by 9 inches in size. It is a real work of art from the printer's standpoint and it will no doubt prove an attractive addition to any plumber's trade library. Interested parties can obtain it from the above-named company upon request, mentioning "Domestic Engineering."

THE WHOLE "KEWANEE" FAMILY.

The National Tube Co., with general offices in the Frick Building, Pittsburgh, Pa., has just issued an unusually attractive catalogue, entitled "The Whole 'Kewanee' Family," embracing all of the Kewanee specialties manufactured at the Kewanee Works, in Kewanee Ill. These specialties, which are constructed on the "Kewanee" principle, i. e., brass to iron thread connection and ball joint seat, include "Kewanee" unions, air drill unions, hose unions, eccentric unions, extra heavy unions, hydraulic unions, union ells, union tees, circulating boiler fittings, boiler couplings, flange unions, union globe and angle valves, union service cocks, etc. The catalogue consists of 72 pages, 5 by 8 inches in size, and it is printed in three colors, from high grade half-tone engravings and fine faced type, on highly glazed paper. Interested parties can obtain this catalogue from the above-named company upon request, mentioning "Domestic Engineering."

THE STANDARD PUMP & ENGINE CO.'S CATALOGUE.

The accompanying illustration will give the reader only a faint idea of the attractive front cover of the new catalogue just issued by the Standard Pump & Engine Co., of Akron, O., illustrating and describing in detail this company's pumping units for water supply, including "Standard" hand pump water systems, "Standard" electric water systems, "Standard" engine driven water systems, "Standard" electric pumps of the suction lift type and the deep well type, "Standard" frost-proof or pit pumps, and last, but not least the "Standard" combined water and lighting plants and "Standard" pneumatic tanks. The catalogue has been compiled in a most careful and condensed manner considering the large amount of information which it contains. It consists of 48 pages, 8½ by 11 inches in size, and interested parties can obtain it from the above-named company upon request, mentioning this publication.



A NEW GAUGE CATALOGUE.

The National Gauge & Equipment Co., of La Crosse, Wis., has just issued a very attractive catalogue illustrating and describing in detail its steam gauges, vacuum gauges, altitude gauges and air-pressure gauges, etc. The catalogue consists of 20 pages, 3¼ by 6 inches in size, and it is gotten up in an exceptionally attractive manner, being printed in two colors. Parties interested in specialties of this kind can secure this catalogue from the above-named company upon request.

The Metal Market

Steel and Iron.

During the past week definite indications of a resumption of shell steel business for both domestic shell makers and for export were noted. Orders for shells just placed and still pending will probably require 125,000 tons steel for delivery in the last half of the year. A contract for 150,000 18-pound shells was placed by the British Government with Western makers while some of the large Eastern shell makers whose contracts are about to expire have received new contracts that will keep them busy for the remainder of 1916. Conditions in the steel trade reflect further expansion in the demand, despite the fact that mills are booking orders steadily. Billets advanced last week to $40 a ton mill, for both Bessemer and open hearth, while open hearth sheet bars are up to $42, mill. Steel consumers are booking far ahead and anticipate that the present activity will continue over next year as evidenced by the demand for protection against 1917 requirements. Railroads are the chief consumers who are seeking to cover next year's needs. Structural business also is a feature of the market. Builders all over the country are very active in placing orders with fabricators disregarding the high prices for steel. A report from Pittsburgh stated that fully 500,000 tons structural shapes were being sought. Merchant car builders booked orders for 1,600 cars last week, most of which were bought by the New York Central from the American Car & Foundry Co. The Russian Government is inquiring for 10,000 cars and a French railroad is in the market for 4,000 cars. Orders for 107 locomotives were placed with the American Locomotive Co. Continued buying of large tonnages of basic iron formed the leading feature in the pig iron trade last week. Steel works have heeded the purchases made by large interests and covered requirements for the second half without delay. Foundry irons also were active in the West but in the East the market was quiet, owing to the railroad embargoes, while the shading of prices by some makers interfered with general selling by other furnaces. A new development was the purchase of some basic iron for delivery in the first quarter of 1917 at $21, delivered. Railroad embargoes are holding down the volume of business in the East, and some furnaces are beginning to accumulate iron on banks as a result of the inability to ship. One Buffalo maker sold a large quantity of malleable at $18, that being at least 50 cents less than the price asked by other makers. But later in the week this interest brought its price up to $18.50, and it is estimated that they sold 15,000 tons at the lower quotation. Production, as reported by the "Iron Age," in February amounted to 3,087,212 tons for 29 days, which is on a record-breaking basis. Quotations are as follows:

No. 2X Northern Foundry, New York	$19.75 to $20.00
No. 2X Northern Foundry, Buffalo	18.50 to 18.75
No. 2X Southern Foundry, Birmingham	15.00 to 16.00
No. 2X Southern Foundry, Cincinnati	17.90 to 18.90
No. 2X Southern Ohio Coke, Cincinnati	18.00 to 18.50
No. 2X Northern Foundry, Chicago	18.50 to 19.00

Copper.

Prices for copper gradually declined last week so that the closing quotations were from a cent to a cent and a half lower than at the beginning of the week. This was caused by the New Haven embargo. Consumers in New England, having large quantities under purchase, are waiting for delivery of this metal before making additional purchases. The reopening of the London market to trading in futures failed to stimulate interest in copper in New York. Important first hands are not shading prices, the concessions that have been noted being made by small producers and second hands, who must keep copper moving. At the close of the week spot and March electrolytic were quoted at 26½ cents, prime Lake at 26¼ cents and spot casting at 25½ cents.

Tin.

A large demand for spot tin coming from several consuming interests resulted in an upward movement of prices. Holders of spot are not inclined to sell and are exacting March delivery against all spot transactions, as prospects for the arrival of enough tin in March to meet guaranteed deliveries are not very bright. Difficulty in securing licenses for exports from Great Britain and also from the Straits are the reasons given as causes that will hold down March arrivals. England has but little tin that it can ship, as stocks there are low, while most of February shipments from the Straits were sent to England. Arrivals since the first of the month amount to only 170 tons, while stocks afloat to the United States total 6,558 tons, of which 4,500 tons are on unknown steamers. Spot closed at 56 cents.

Lead.

A continued upward trend in the price of lead, with independents selling at premiums over the price of the leading interest, tends to make the lead market unusual. There has been a large demand from both domestic and foreign buyers and sales made by outside interests have been heavy. The principal producer in advancing its price $4 a ton failed to meet the level set by the independents and sold only small lots to regular customers. Some factors believe that independents have booked orders that will take most of their output in the next two months. The leading interest, on the other hand, has been trying to keep the price of lead down so as to secure supplies of ore. When this is accomplished, it is expected that the American Smelting & Refining Co. will soon take the lead and put its quotations up. Lead closed at 7.10 cents.

Spelter.

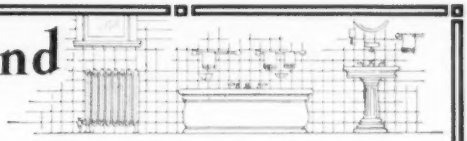
The market declined steadily all last week and consumers refrained from buying. The weak market is attributed to the efforts of leading producers to buy ore after depressing the spelter market. Some holders are not offering in face of the reaction, as they anticipate a strong market as soon as leading interests have completed ore purchases. Spot and futures declined 2¼ cents last week, and the market closed with spot selling at 17¼ cents, New York, and 17½ cents, East St. Louis.

Old Metals.

Selling prices for old metals are quoted approximately as follows:

Copper, heavy cut and crucible	25 cents
Copper, heavy and wire	24 cents
Copper, light and bottoms	21¼ cents
Heavy machinery composition	18¼ cents
Brass, heavy	15⅜ cents
Brass, light	13 cents
No. 1 clean brass turnings	13¼ cents
No. 1 composition turnings	17 cents
Lead, heavy	6¼ cents
Tea lead	6⅛ cents
Zinc scrap	17¼ cents
Solder joints	8½ cents

Among the Plumbing and Heating Contractors



Illinois

Chicago and Vicinity.

Members of the North and West Side Master Plumbers' Pleasure Club were the guests of the Milwaukee Master Plumbers' Pleasure Club, Milwaukee, Wis., on the afternoon and evening of Friday, March 17th. An aggregation twenty-two strong, steamed away on a fast train, carrying with them a picked five-man bowling team which they matched against a similar team selected from among the ranks of the "Famous" City plumbers. Upon arriving in Milwaukee, the visitors were met by a reception committee at the railway depot, after which they were escorted to waiting automobiles and taken out for a two hours' tour of the city, returning at 6:30 p. m. to the Millioke Club, where dinner was served. At 8:00 p. m., the bowling teams of the two clubs opposed each other vigorously at one of the city's bowling alleys, while the rooters of both clubs cheered and applauded for their respective teams. The visiting plumbers, who were royally entertained by their Milwaukee brothers in the trade, were: E. C. Wagner, Lewis Nelson, Wm. F. Bahn, F. W. Pripps, P. M. Munn, J. Kleker, F. J. Dillenburg, G. H. Schey, Chas. F. Taffe, C. A. Dreier, John Cepican, A. F. Frome, F. E. Pearson, F. J. Bohn, Wm. Rooney, P. Jacoby, H. Swade, L. Christianson, P. Rech and A. Mahoney.

The next meeting and dinner of the Chicago Commission on Ventilation will be held on Tuesday, March 21st, at the Morrison Hotel, and the subject of hospital ventilation will be discussed. At the meeting held on February 22nd, the subject was discussed pro and con, with representatives of several well-known hospitals present. Dr. A. J. Oschner, chief surgeon of Augustana hospital, was the chief exponent of natural ventilation by the use of windows, while there were other hospital men who argued in favor of a scientifically installed supply and exhaust system of ventilation. Dr. E. Vernon Hill, chief of the Division of Ventilation, Chicago, presided at the meeting, and he later announced that some actual tests in mechanically ventilated hospitals, for the purpose of comparing results with hospitals that have no such equipment, will be made, probably before the next meeting of the commission.

The sanitary committee of the Chicago Master Plumbers' Association is formulating plans to co-operate with the Health Department of the city in problems of practical sanitation, the Commissioner of Health having promised that he will work together with the committee in eliminating insanitary plumbing, etc., which exist in various sections of the city.

David Whiteford is back at his desk in his plumbing shop at 1213 West Randolph Street, after being confined at his home for several days with an ailment which he is pleased to call "near-grip." Mr. Whiteford, when seen recently, commented upon the action of the Indiana master plumbers, in deciding to call themselves sanitary engineers in place of plumbers. "The craftsmen of the Hoosier state have taken a forward step," said he, "and I think it was a very timely one. The only suggestion that I would have offered, would have been this, namely that the term 'practical sanitary engineers,' or the "Indiana Society of Practical Sanitary Engineers,' might have been more to the point, perhaps. I remember, back in the old days, about 27 years ago, when some master plumbers in Chicago banded together under the name of the Chicago Sanitary Association, and held meetings of an educational nature in Burke's Hotel, one of the old-time hostelries of the city. I recall that at that time, the members of that small but live organization used to refer to themselves as practical sanitary engineers."

At Illinois Master Plumbers' recent Convention in Peoria.—From left to right: C. A. Dreier, Wm. J. Lang and Joseph W. Cannon; all of Chicago.

J. J. Wade, Sr., one of the well-known veterans of plumberdom in the city, has recently recovered from a cold which kept him out of the harness of business activity for several days.

E. C. Oakes, who conducts a plumbing establishment at 3634 Fullerton Avenue, has been awarded the contract for the installation of plumbing systems in eight flat buildings to be erected on North Harding Avenue. He also has secured the contract for plumbing installations in a number of flats to be built at 2433 North Kildare Avenue.

The plumbing contracts for seven apartment houses, to be built on Berlin Street, have been awarded to M. Raskin, of 2109 West Division Street.

T. A. Hawkswell, of 5000 North Leavitt Street, will install the plumbing in a four-flat apartment building, to be erected at 4300 Sacramento Avenue.

J. J. Babka, of 3765 Ogden Avenue, has secured the contract for the installation of the heating system in a thirty-flat apartment building, to be constructed at 172 North LaCrosse Avenue.

The Thos. J. Douglass Co., of 160 North Dearborn Street, has recently been awarded the contract for the installation of a steam heating system in a church to be built at a cost of $30,000 at Marion and Ontario Streets, Oak Park.

Other Cities in the State.

The steam heating and plumbing contracts for a public high school to be built at Springfield, at a cost of $400,000, have been awarded to Peter Eckzeler, of St. Louis, Mo.

O. W. Dawson & Co., of 340 North Main Street, Decatur, will install plumbing and heating systems in a $40,000 residence to be erected in that city.

Maryland

Baltimore and Vicinity.

The city of Baltimore has been building apartment houses for two years only, and one of the largest yet erected, the "Emersonian," is at present in course of construction for I. E. Emerson. Joseph Evans Sperry is the architect. The structure, which will have 28 apartments, will be six stories in height, and is situated at the entrance to Druid Hill Park on Eutaw Place. The heating contract has already been let to the Enterprise Steam & Hot Water Heating Co., and the successful bidder on the plumbing installation will be made public at an early date.

The Enterprise Steam & Hot Water Heating Co., of 500 North Howard Street, is doing more figuring at this time than has been done at this season for many years past, and as the Enterprise is one of the leading heating concerns in this city, it speaks well for conditions at large. Among the contracts on its books at the present time are heating installations at the Public Service Building, Lexington and Liberty Streets; the Marcus Garage; the Drovers' and Mechanics' Bank; the Mount Royal Building, on Charles Street; and extensive alterations to the heating installation of the local Y. M. C. A.

McGuire & Ahern, of 707 Howard Street, are completing an extensive plumbing contract on the Hess Memorial Hospital at Monument Street and Rutland Avenue. They are also working on a number of smaller contracts.

Bryan & Cary, of 1828 Mount Street, report that things are looking brighter. They have on hand a few good contracts, including the plumbing and heating of an apartment house and a ten-room residence for F. M. Miller on Rognel Heights.

The Neser & Quinn Co., of Lexington and Green Streets, has recently supplied the Sollers Station plant, several apartment houses and three rows of dwelling houses with plumbing equipment, and reports that "business is great."

W. E. Wood Co., of 18 North Howard Street, one of the oldest plumbing establishments in the city, but who are now specializing on heating, have on hand the following heating contracts: C. Hughes Manly's residence near Catonville; the residence of John H. Winfelder, Severna Park; Walter B. Brook's residence at Stevenson; the garage of the City Baking Co., at 412 North High Street, and the residence of Dr. L. F. Barker, at Guilford.

Annapolis.

C. A. Howard, of 30 State Circle, when interviewed by a representative of "Domestic Engineering," reported "still living," and from the following list of contracts which he has recently secured it would seem as if he were surely getting his share of business: The plumbing and heating contracts for the residence of Dr. J. M. Steiner, Severna Park; similar contracts for Joseph Groh's residence, in Severna Park; C. A. Doyer's residence, Wardour; Dr. Frank Anderson's residence, Wardour; the plumbing and heating installation for two cottages in Severna Park for O. L. Molter; contract for the plumbing, heating and septic sewage disposal systems for the home of Carryl O'Brien, at Wardour. The star contract, however, is one for the residence of Dr. Martin Smith, in Annapolis. This contract calls for plumbing (including six bath rooms), steam heating, gas piping, vacuum cleaning system and water supply system, with the highest grade of fixtures and materials to be used throughout. Mr. Howard also has a contract with the city of Annapolis for the laying of 3,000 feet of sewer pipe.

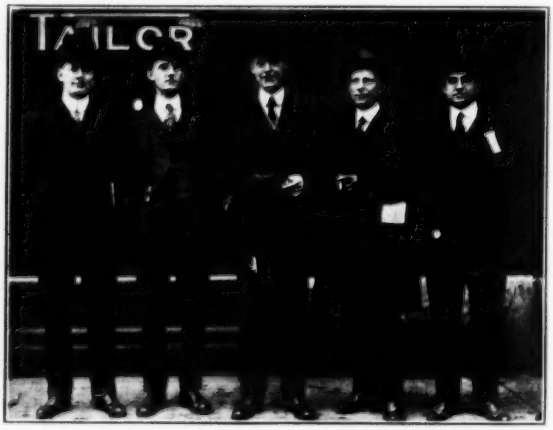
C. E. Fouche, of this city, has the following contracts on his books: Plumbing and heating installation in the residence of M. A. Meeney, on Brewer Avenue; the plumbing and heating installation in Dr. F. J. Gorner's residence, Hanover Street; the plumbing and heating installation in H. C. Snyder's residence, on Jefferson Street, and similar work for I. S. Glickman, on Main Street.

Ohio

Cincinnati and Vicinity.

At a special session of the Courthouse Building Commission of Cincinnati held recently it was decided, in view of the criticism of Building Commissioner Rendigs, to change the size of the risers from six to eight or ten inches, as the Commissioner may elect.

Bids will be received until 12 o'clock noon, April 5th, on the work of completing the new school building on South Street, Reading, O., including plumbing and gasfitting, heating, ventilating, electrical and other work. Bids on these various kinds of work may be submitted separately. Garber & Woodward, 2803 Union Central Building, Cincinnati, are the architects, and plans may be had from them or from George W. Fricke, clerk of the board of education, at Reading.



At Ohio Master Plumbers' recent Convention in Columbus.—From left to right they are: F. F. Bulkley, of the Cleveland Faucet Co., Cleveland; George L. Miller, of the Buckeye Pump & Mfg. Co., Columbus; Leon Goodspeed, of the Wolverine Brass Works, Grand Rapids, Mich.; D. W. Chapman, of the Chapman Steam Specialty Co., Canton, O.; and H. A. Stamper, of the Valle-Kimes Co., Dayton, O.

Plans for the construction in Cincinnati of a magnificent new Masonic Temple are rapidly assuming shape, the financing, as the most important preliminary detail, being the first thing to be tackled. There is already $200,000 available for the purpose, and an additional $100,000 is to be collected from various lodges in this section, whereupon work will be started on a building to cost $500,000.

Walter Melching has been awarded by Weber, Werner & Adkins the plumbing contract on a $15,000 residence for W. Y. Youmans in a Kentucky subdivision. These architects will receive bids on the new Masonic Temple at Ironton, O., until March 28th.

New York

The main feature of the monthly meeting of the Manhattan Branch of New York Master Plumbers' Association, to be held at Terrace Garden, New York City, on Tuesday evening, March 28th, will be a lecture, "From Ore to Finished 'National' Pipe," by C. F. Roland, accompanied by three reels of motion picture films illustrating the process. F. N. Speller, metallurgical engineer of the National Tube Co., of Pittsburgh, will also attend the meeting and present a new topic for discussion under the subject of "The Prevention of Corrosion of Pipe," particularly in hot water heating systems, by means of eliminating from water used in such systems oxygen, one of the greatest causes of corrosion. The speakers will be introduced by Isaac J. Brown, president of the Manhattan Master Plumbers' Association.

Teran, Mahaney & Munro, heating and ventilating engineers of New York City, are now located in the Grand Central Terminal Building, having moved from 601 First Avenue, on March 1st.

George Irr, of Buffalo, has moved his plumbing and heating business from 517 Washington Street to more commodious quarters at 700 Washington Street.

New Jersey

Thos. Walton, of Camden, formerly of the firm of Walton Bros., has been appointed plumbing inspector in that city to succeed H. B. Francis, who has resigned after serving the city twenty-five years.

Wm. J. Kelly, of Ferry Avenue, Camden, has the contract for installing plumbing and heating equipment in a number of new houses which are in the course of construction.

C. N. Davis, of Woodlyne, has opened a plumbing shop in that town and would like to receive catalogues from manufacturers and jobbers of plumbing supplies.

Plans are being drawn for a new high school to be erected in Camden.

L. C. Simpson Plumbing Co., of Camden, will shortly move into more spacious quarters on Broadway Avenue, in that city.

A. Heppard, of Camden, has been awarded the contract for plumbing a row of houses which are being erected in Woodlyne, N. J.

E. F. Simpson, of West Collingswood, has the contract to install plumbing in a row of houses which are being erected in East Camden, for T. Coulter.

Maine

The annual ladies' night of the Master Plumbers' Association of Portland, Me., was held at Riverton Park Casino on Thursday night, March 9th. The party left the city in a special car at 5:45 and dinner was served at 6:30. The Gibson mandolin orchestra furnished music.

Following the dinner Scott Wilson, former attorney-general of Maine, delivered an address on the Employers' Liability act, which several months ago went into effect in Maine. The affair was well attended and a most enjoyable one. President Fred E. Wheeler, of Woodfords, was toastmaster and presided during the banquet.

Connecticut

Bridgeport and Vicinity.

Plans for spring building operations are already taking form in many sections of the State. The demand for moderate priced apartments is being felt everywhere and many investors are being induced to assist in meeting this demand. In Bristol one concern, the Bristol Realty Co., already has plans ready for thirty houses, each to contain two modern apartments. Bristol is within commuting distance of several factory towns and is a most popular residential municipality.

George R. Hempstead, who has been in the plumbing business in Groton for 23 years, has taken his son, Harold Hempstead, into the firm and now plans to take things a little easier in the future. Mr. Hempstead has had a successful business career and his firm is favorably known in the trade.

The plumbing and stove firm of Culverwell & Kerr, at Seymour, has been dissolved, Mr. Culverwell continuing the stove and tinware end of the business and Mr. Kerr taking over the plumbing business.

N. B. Curtis & Co., of Bridgeport, have been awarded the contract to install the plumbing and heating in a hall and apartment building on Hallett Street, for the Bohemian Sick Benefit Society. It is a three-story brick building and it will be modern in every respect.

Joseph Glass, of Bridgeport, has contracts for installing the plumbing and heating in two houses at Bronx Park for Spargo & Winter, and similar work in a house on Hawley Avenue for Helen V. Ryan.

Plans have been prepared for a store and tenement building on Pembroke Street for Charles Rader. H. F. Bryant, of Bridgeport, will install the plumbing and heating work.

Among the contracts recently secured by the Charles Thatcher Co., of Waterbury, is one for the installation of plumbing and heating in a house on Frost Road for Walter D. Millis, and another for a three-family house on Elmwood Avenue for Francis T. Reeves.

The Barlow Brothers Co., of Waterbury, has secured several contracts recently, among them being the plumbing and heating installation in a house for A. A. Benedict on Tower Road, and the contract for the plumbing and metal work in a new church structure for the First Baptist Church of Waterbury.

Stamford and Vicinity.

Garrett D. L. Raymond, of 37 Bank Street, has recently completed a number of plumbing and heating installations worthy of mention, among them being the following: Plumbing and heating contract for the Gray Staunton residence; heating contract for the residence of M. A. Raucke, similar contracts for the greenhouse of C. E. Powell; plumbing and heating contract for Leo Oten's residence; heating contract for the residence of Joseph Spearing, Ruth Ferris, and the superintendent of the Phillips Chemical Co; heating installations in three garages are also under way for C. D. Lockwood, A. N. Phillips and the Station Taxi Co.

Plumbing and heating installations in schools is a specialty with the firm of Richards & Chard, of 27 Summer Street. On their books are contracts for the plumbing and heating installations in the Normal School of Bridgeport, and the heating installation in the Beacon (N. Y.) High School. Their residential work includes the following: Contract for plumbing installation in the home of Benjamin Neilds, of Rye, N. Y.; plumbing and

heating installations in two houses in Greenwich for D. R. Calhoun, and the heating installation in the residence of C. W. Barlow, of Greenwich. Three large residences on which they have contracts for heating are those of Capt. M. E. Hanna, at Shippan Point; Henry Miller, in Stamford, and George E. Hill, at Strawberry Hill.

Feeks & Rutz, of this city, have on hand contracts for the plumbing and heating installation in a two-family house belonging to Miss Waterbury; similar contracts for Mrs. Victor P. Wardwell's bungalow and Paul Guernsey's cottage. This firm has recently completed the plumbing and hot water heating installations in the residence of Matthiew Morrison, and the plumbing and steam heating installations in George Weed's residence.

O'Brien & McNamara, of 223 Atlantic Street, have the contract for the plumbing installation in Capt. M. E. Hanna's residence at Shippan Point, and the contract for the plumbing and heating installation in three two-family dwellings for John Brennan. They have recently completed the plumbing and heating installation in a two-family house for Alfred Trolle, similar work in John J. Sherwood's residence on Quintard Terrace and the residence of C. E. Browne, Jr., on Soundview Avenue; the residence of F. M. Brown, Shippan Point, and in a house and cottage on the J. W. Butler estate, at Norton.

Miller & Son, of 711 Main Street, Stamford, while only of six months' standing as a plumbing and heating firm, have a long list of contracts on hand, which include the plumbing and heating installation at William J. Burgess' residence on Summer Street; the plumbing and heating work in an apartment house at Beckley and Atlantic Streets for the Harris Construction Co.; the contract for the installation of the plumbing and heating in B. J. Goggin's residence on Clark's Hill Avenue, and for a residence in Shippan Point for Scofield & Rosendale, and a similar contract for two residences belonging to Dr. Pomeroy. They also have the plumbing and heating contracts for eight bungalows in Dorien, to be built by The Bungalow Corporation. The firm is composed of Albert A. and Albert G. Miller.

H. Davidoff, of 75 Pacific Street, Stamford, is finishing up the installation of plumbing and heating equipment in the Hebrew Institute, in that city. Mr. Davidoff also has the plumbing and heating contract for a two-family house for Thomas Sarsfield to be built in the Hospital tract, and a similar contract for a large country residence in Grey Rock.

Opperman & Hennessey, of Stamford, have completed the $22,000 heating contract on the Stamford High School. They have the plumbing and heating contract for the Coscob Graded School at Coscob, similar contracts for the residence of R. S. Cameron, Southfield Point, and the residence of W. F. Collins, of Shippan Point.

In addition to the overhauling of several residences, James J. Horan, of 48 Gay Street, Stamford, has the plumbing and heating contracts for the apartment house being erected at 97 Smith Street, for Angelo Boccozzi; the plumbing and heating contracts for the residence at No. 1 Warren Street, of which George A. Rogers is the builder, and similar contracts for the residence of Gertrude Shuman on Bedford Street.

Other Cities in the State.

Kinzel Bros., of East Port Chester, are at work installing the plumbing and heating of the Libano Building, on Main Street, Stamford, and have recently completed the plumbing and heating installation of a large residence in Coscob, and still another in East Port Chester.

Samuel Kingsley, of Sound Beach, has secured the plumbing and heating contracts for two residences to be erected for Benjamin Lockwood in that city. Mr. Kingsley has recently completed the plumbing and heating of the Harold A. Cox residence at Riverside.

Arthur E. Benedict, of 87 West Street, South Norwalk, has enlarged his plumbing establishment by the addition of a new two-story building, 20 by 42 feet. The building has a ground level basement. The first floor contains the office, while the upper floor and basement are to be used for storage purposes. The shop is fully equipped, including a power pipe threading machine.

Wells Buttney, of Springdale, is at work on a heating and plumbing contract at the Stamford Rolling Mills. The plumbing installation is on an elaborate scale, as the employees are to have the benefit of the most sanitary fixtures.

Chas. L. Davis, of New Canaan, has the plumbing and heating contracts for two residences on Prospect Heights.

C. W. Penell, of 81 Haviland Street, South Norwalk, has the plumbing and hot-water heating contract for an apartment house, located on East Avenue, for J. J. Metulla; the plumbing and heating contracts for the residence of T. W. Cleveland on Strawberry Hill, similar contracts for the residence of F. O. Johnson on Lincoln Avenue and an apartment house for Steven Kisch on Lincoln Avenue.

Many plumbing and heating contracts of note are on the books of Fred J. Wolfel, of New Canaan. These include the plumbing and heating installation for the new residence of Adrian Van Sinderen, the plumbing and heating of St. Stephen's Episcopal Church Rectory in Ridgefield, the plumbing and heating contracts for Frederick A. Lewis' residence in Ridgefield; contract for the plumbing, heating and water-supply installations in the residence of Mrs. Dillon Brown, in New Canaan. Mr. Wolfel also is completing the plumbing and heating installations in the residence of Rev. J. H. Write in the same town, and has nearly completed the overhauling of the plumbing installation in the country home of Geo. F. Herriman.

Michigan

Detroit and Vicinity.

Vinton & Co., Detroit, one of the oldest general contracting firms, doing a plumbing and heating business, announces its retirement from business. It will, however, continue in business as an investment firm. The business was established some 60 years ago by the late Warren G. Vinton.

Joseph T. Hughes, of 16 North Washington Street, Ypsilanti, has purchased the interest of his partner, M. C. Hawkins, and will continue the plumbing business under his own name.

The Knee Heating Co., of Grand Rapids, has been awarded the heating contract for the new Calvin College building. It is one of the largest heating contracts awarded this year. The plumbing contract went to Dennison & Dykeman.

Detroit plumbers look forward to the greatest year in the history of the city, owing to the number of new homes and apartment buildings under consideration. "With any kind of weather, every master plumber will have all the work he can handle this coming spring and summer," said one leading concern. "It isn't going to be a question of getting work, as much as it will be to do it after you get it."

Missouri

Among the progressive men of the Missouri Master Plumbers' Association, there is a Kansas City gentleman, who has for years been a live and active figure in the trade circles of that State. We refer to M. C. Enggas, of 418-20 Grand Avenue, who certainly is entitled to a number of complimentary designations, among them,

M. C. Enggas, of Kansas City, Mo., and His Interesting Family.

able craftsman, good citizen and good father. That he is worthy of the latter appellation is fully confirmed by a glance at the accompanying picture, where he is to be seen with his family.

Mrs. E. D. Hornbrook, of Kansas City, Mo., was recently elected chairman of the Kansas City Committee of the American Society for Relief of French Wounded, whose headquarters are in New York City. Mrs. Hornbrook's friends in the National Association of Master Plumbers will be interested to know that she is conducting an energetic campaign for supplies for sufferers in the unfortunate conflict in Europe.

California

San Francisco and Vicinity.

With very few exceptions the building permits for the Pacific Coast cities showed up with a good healthy increase during February, as compared with either of the months immediately preceding or with the same month of last year. San Francisco led off with permits to the value of $1,356,915, a larger total than for any month in the preceding seven, showing a gain of nearly fifty per cent over the previous month and of about seventy per cent over the month of February, 1915. Oakland and San Diego also showed considerable gains over January, 1916, and February, 1915. Sacramento showed a slight increase over January but a loss as compared with February, 1915. Los Angeles, with $947,551 in permits for February, owing largely to the abnormally large showing for January, showed a considerable drop as compared with that month but a gain of over $400,000 as compared with February, 1915. In the north, both Portland, Ore., and Seattle, Wash., showed good comparative gains, though the totals are still below the high levels of a few years ago.

Generally speaking, plumbing concerns are fairly busy with small work and with the finishing up of old contracts. As shown by the increase in building permits the outlook is for a steady increase in work as the season advances, with a number of good-sized contracts to be let before long.

The revised plans for a store and hotel building to be erected by Rousseau & Rousseau at Seventh and Howard Streets call for a steam heating system and an up-to-date hot-water supply system. The building will cost about $25,000.

G. Weissbaum & Co., San Francisco pipe dealers, who last week bought the entire water supply system of the Panama-Pacific Exposition, have now bought the Tower of Jewels, the most striking of all the Exposition buildings. The Tower of Jewels stands 433 feet above the surface of the ground and contains 2,000 tons of steel. It will be torn down by the new owners.

Other Cities in the State.

Investigation shows that the Hemet water system was very badly damaged by the recent floods in that neighborhood. The large main pipe line was washed out for a distance of six miles near the South Fork of the San Jacinto River.

C. E. Linder has purchased the plumbing business of Lucien Orten, at Nordhoff.

An automatic sprinkler system with the accompanying hose reels, stand pipes, etc., is provided for in the plans for a $35,000 frame box factory two stories high and covering a site 70x225½ feet in dimensions to be erected at Brighton, near Sacramento. Bids will be called for at once.

Summarstrom Bros. have secured a permit for the construction of a one-hundred-room apartment house at Haste Street and Telegraph Avenue, Berkeley, to cost $60,000.

Foss & Jones, of Pasadena, were the lowest bidders at $10,421 for furnishing all labor and material for the installation of heating systems in the new buildings being erected at the Lincoln High School site.

Arkansas

M. B. Sanders and E. N. Petit tendered their resignations recently as members of the Little Rock Plumbing Board. A. V. Rogoski and Omar W. Field were named as their successors by Mayor Taylor. They are the master plumber members of the board, the other members being two journeymen and J. L. Wright, plumbing inspector. The causes of resignation were inability to spare the time to serve on the board.

The City Council of Little Rock fixed the licenses of gas-fitters as follows: Shops employing three journeymen or less, $12 per annum; more than three and less than ten, $25; more than ten, $50. The licenses are payable semi-annually. Licenses for master plumbers are at the same rate. The rates were fixed by the Public Utilities Committee.

Nevada

William DeCourcey, Thomas L. Gough, F. H. Schmalle and S. Carson, of San Francisco, were in Reno last week looking into the matter of piping water for heating and bathing purposes from Steamboat Hot Springs to Reno. A contract permitting the piping of the water was recently concluded with the owners of Steamboat Springs.

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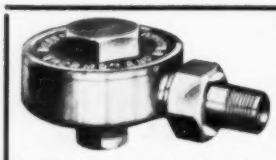

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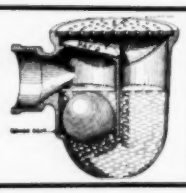

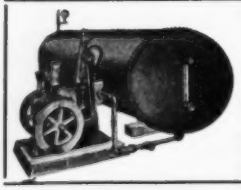

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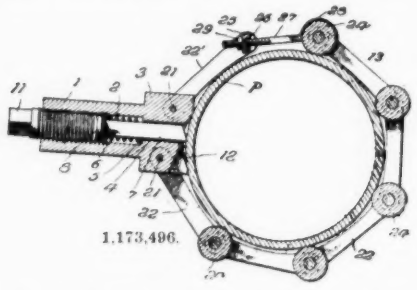
Patents

Heating Department.

1,173,496. Pipe-Cutter. Earl N. Elzay, Findlay, O. In a pipe cutter, the combination of a tubular stock having a head at one end with an angular socket communicating with the bore of said stock, a shoulder formed in said bore at the junction with said socket, a cutting die mounted in said socket and having one end projecting into said bore, said end being provided with a lateral shoulder, a coiled spring mounted on said die between said shoulder and the shoulder in said bore, an adjusting screw having threaded engagement with said bore at the rear of said die for con-



trolling the projection and retraction of said die, and a flexible element connected with the head of said stock adapted to encircle the pipe to be cut, the head of said stock being provided with angular seats, and pipe guides having angular stems mounted in said seats.

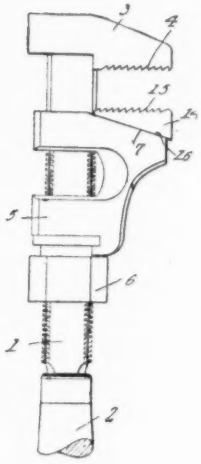
1,173,690. Die-Stock. George Voetsch and Charles Voetsch, Turners Falls, Mass. A die-stock comprising a body having a transversely extending recess, the walls of which are undercut, a die having beveled end walls slidably insertible into said recess, a guide having beveled

end walls, slidably insertible into the recess above the die, means for operatively connecting the guide and die and positively holding the guide and die so that the openings therethrough shall be in alinement, and means for holding the die from movement in said recess.

1,174,167. Pipe Wrench. Harold King, Bascom, Ohio. A wrench embodying a material-holding jaw having a groove; a removable stud threaded into the jaw within the contour of the groove and spaced peripherally from the wall of the groove; a spring holder projecting from the stud; a grip slidable on the jaw and on the end of the stud and provided with an eye receiving the spring holder slidably; and a compression spring interposed between the eye and the stud.

1,174,586. Heating System. August Kehm, Chicago, Ill. In a heating system, in combination, a steam generator, a plurality of radiators located at different distances from the generator and each comprising a relatively large water space and small independent steam space with a common wall which is large in proportion to the size of the steam space and with each of said spaces constructed for free movement of the corresponding fluid to contact with all parts of the adjacent side of the said

common wall and the greater part of the water space located above the level of the highest part of the steam space, a steam pipe extending from the generator directly to the upper part of the steam space of the radiator which is the most remote from the generator and thence successively to the upper part of the steam space of each remaining radiator toward the generator, and a return pipe extending from the lower part of the steam space



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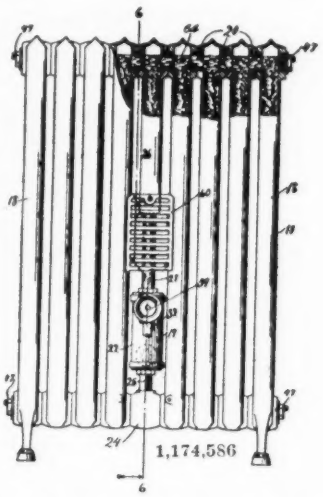
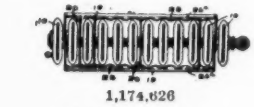


1,174,586

of the radiator which is the most remote from the generator to the generator and having an intermediate connection with the lower part of the steam space of each of the remaining radiators.

1,174,626. Radiator Shield. Clarence C. Shipp, Indianapolis, Ind. A shield for incasing steam radiators, comprising two adjustable members, means for holding the overlapped ends of said members in adjusted position, sheets secured to the inner walls of said members to form pockets for storing a determined supply of water, and means actuated by a reduced volume of water in the pocket for automatically restoring the amount of water removed from the pocket through evaporation.



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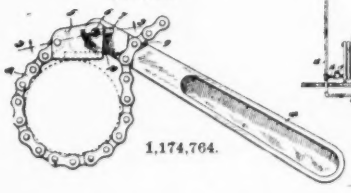
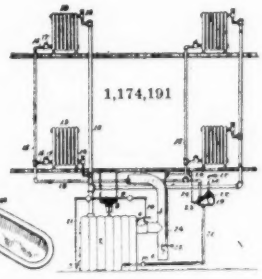


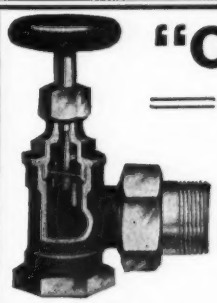
1,174,764.



1,174,191

1,174,764. Wrench. Frank W. Riesenberg, Chicago, Ill. A wrench comprising a handle member; a jaw member secured to said handle member to have bodily movement relatively thereto, said handle being also given a fulcrum on said jaw independent of the means securing said jaw; and a chain pivotally connected with said jaw, there being a recess in the side of said handle member arranged to receive the links of said chain, substantially as described.

1,174,191. Steam Heating System. William G. Snow, Newton Center, Mass., assignor to Warren Webster & Company, a corporation of New Jersey. In a steam heat-



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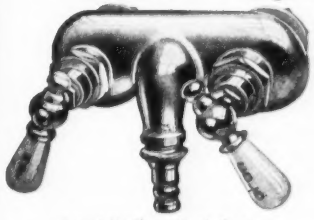

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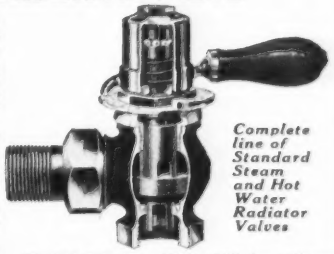

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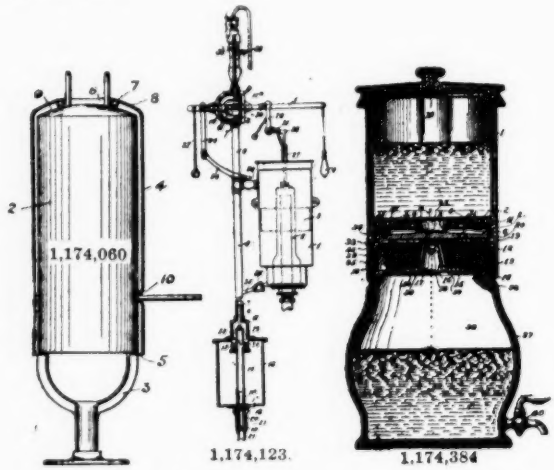
ing system, the combination of a plurality of radiators, a steam boiler, means to supply steam to the radiators from the boiler, a return pipe leading from the radiators and communicating with the lower part of the boiler for returning the water of condensation thereto by gravity, a check valve in said return pipe to permit the water of condensation to pass into the boiler while preventing back flow therefrom, means for regulating the degree of temperature of the furnace of the boiler, float actuated means controlled by the level of the water in the return side of the system for controlling the means for regulating the degree of temperature of the boiler without affecting the flow of water through the return pipe into the boiler, and separate automatically operating temperature regulating devices responsive to variations in the pressure in the boiler for varying the temperature of the furnace of the boiler to suit changes in steam pressure within the boiler, but supplemented in its effect by the float controlled means for regulating the temperature.

Plumbing Department.

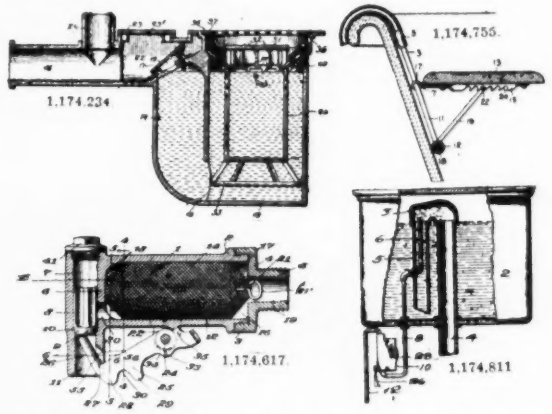
1,174,060. Shield for Stand or Range Boilers. George G. Firth, Brooklyn, N. Y. As an article of manufacture, a detachable enameled shell for stand or range boilers, said shell being open to the atmosphere adjacent to the boiler at both ends thereof, the opening at the upper end being surrounded by an inwardly turned reinforcing bead effective to maintain the boiler and shell properly spaced apart.



1,174,123. Water Closet Fixture. Andreas Valdemar Christensen, Odense, Denmark. A water closet fixture including a flush tank, a container located below the frost line, pipe connections between the container and the flush tank through which the water passes to supply the flush tank, mechanism for controlling the flow of water to the flush tank, said mechanism having means for establishing a communication between the pipe connections and the container after the tank has been flushed, and a drain pipe connected with the bottom of the flush tank and with the said pipe connections and provided with a normally open valve arranged to be automatically closed by pressure within the said pipe connections.

1,174,384. Combined Sanitary Water Filter Aerator and Cooler. Derrell E. Brown, Oceanpark, Cal. In a filter a water receptacle having an opening through its bottom; a porous closure closing said opening; a filter chamber below the water receptacle; a distributing plate supported in the filter chamber below said opening and provided with holes to distribute liquid falling on said distribut-

ing plate, said filter chamber having a hollow dam extending up thereinto and said dam having an opening at the top; a cap extending over said dam and forming a sluice way between the dam and the sluice cap, there being a passage from the filter chamber into said sluice way and filter material between the passage and the level of the top of the dam.



1,174,234. Drain Trap. George J. Dehn, Chicago, Ill. In a drain trap, the combination of a basin having an opening in its top, a sediment collecting receptacle having a surrounding wall and openings in said wall, a chamber being formed between said wall and the basin wall for the passage of liquid from the receptacle to the basin, outwardly extending lugs on said receptacle for arresting solid matter and removable with the receptacle, said lugs being disposed above the bottom of the basin, and a trap pipe leading from the basin.

1,174,755. Bath Tub Seat. George H. Mullen, New York, N. Y. In a device of the character described, a supporting member formed with a pair of hooks, a cross bar and a pair of journals, a pair of cleats each having one end bent back upon itself for forming loops encircling said journals and notches for receiving a brace, a seat member, means passing through said cleats for rigidly securing said seat member to the cleats, and a brace pivotally mounted on said cross bar, said brace being provided with a bar engaging the notches in the cleats.

1,174,617. Faucet. Walter A. Schmeykal, Goshen, Ind. A faucet having a distributing chamber and a valve chamber, the valve chamber opening directly into the distributing chamber and having an outlet, a gravitationally closing valve mounted in the valve chamber and adapted to obstruct the outlet, a nozzle carried by the valve chamber and disposed below said outlet, and a valve lifting bar movably connected with the distributing chamber and having its effective lifting end traversing the nozzle and extending thereinto and bearing against the bottom of the valve and provided with angularly disposed surfaces terminating in a relatively sharp longitudinally extending edge, said lifting bar having an angularly disposed branch underlying the distributing chamber and extending in the direction of the discharge end of the nozzle and provided with relatively spaced weight portions forming an intervening receptacle receiving space therebetween.

1,174,811. Apparatus for Operating Flush Tanks. John A. Blichmann, Dubuque, Iowa. In a device of the character described a flush tank, a siphon in the tank, a jet in the tank and emptying into the siphon a valve situated outside of the tank for operating the siphon and refilling the tank through the jet, said valve having therein a dia-

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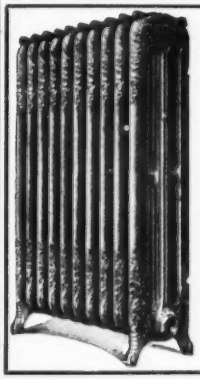

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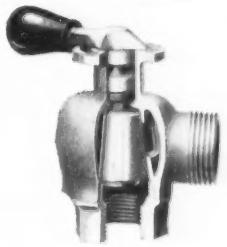

¶No scale or dirt can get in, as no working parts are exposed to steam or vapor. ¶The shear action of conical rotating disc insures tight gate and takes up all wear. ¶They can't stick, can't leak and will last. Guaranteed.

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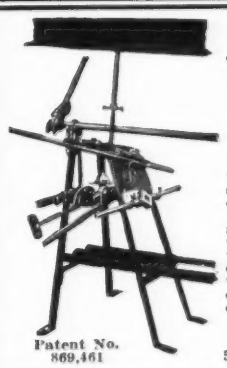

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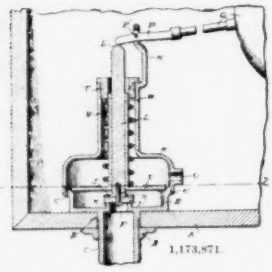
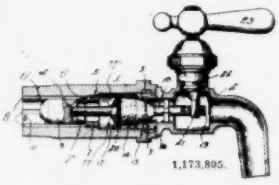
phragm for controlling the flow of water into the tank through the jet.

1,173,871. Silent Inlet Valve for Closet Tanks. William B. Royer, Baltimore, Md. A silent inlet valve for closet tanks, comprising an inlet pipe for attachment to a pipe, a chamber communicating with said pipe, a casing fitted to the wall of said chamber and having an exit opening, a float actuated valve regulating the communicating opening between the pipe and chamber, a spring pressed pressure member adapted to seat upon the wall of said chamber and adapted to offset pressure of the water which is fed into the chamber.





1,173,895. Faucet. William T. Taggart, Plainfield, N. J. In a faucet, a tubular coupling having the bore thereof larger at one end than at the other with an annular shoulder formed at the junction of said larger and smaller portions, the smaller portion being threaded adjacent said shoulder, longitudinal corrugations formed on the inner face of the reduced portion of said bore and extending from said threaded portion rearwardly, a nipple engaged with said threaded portion and having a rearwardly projecting exteriorly reduced extension, a cylindrical valve slidable in the corrugated portion of said bore and having a truncated cone shaped rear end and a concaved inner end for receiving said nipple extension whereby a watertight connection is normally formed between them and which are so held by the impact of the inflowing water against the cone shaped end of said valve, a valve opening member extending through said nipple and entering said concaved valve end, and means for forcing said member rearwardly against said valve whereby the valve is opened against the pressure of the inflowing water.

FINANCIAL TROUBLES.

Milwaukee, Wis.—The Blue Blazes Heating Co., of 248 Fourth Street, has filed a petition in voluntary bankruptcy, scheduling its liabilities at $4,548.49 and its assets at $1,800.

Baltimore, Md.—William H. Wix, engaged in the heating and plumbing business at 2110 Maryland Avenue, has filed a voluntary petition in bankruptcy, scheduling his liabilities at $4,681.

Utica, N. Y.—A petition in bankruptcy has been filed against the Julian Batchelor Co., which conducts a plumbing and heating business at 12 Pearl Street in this city. It is stated that the liabilities of the company amount to about $10,000.

Cincinnati, O.—Mrs. Kate Geiler, who conducts a plumbing business at 1608 Queen City Avenue under the name of Wm. C. Geiler & Co., has been made defendant in involuntary bankruptcy proceedings, filed in the United States District Court by three of her creditors. Mrs. Geiler is the only woman plumber in this city. She filed schedules showing liabilities of $1,432 and assets of $865.60.